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DISEASES OF WOMEN AND CHILDREN

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THE AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

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No. 1

ORIGINAL COMMUNICATIONS.

AN APPRECIATION OF THE WORK OF DR. HENRY
J. GARRIGUES IN INTRODUCING ASEPSIS
INTO OBSTETRIC PRACTISE.*

BY

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New York.

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Mr. President and Fellows of the American Gynecological Society:

It is with the greatest diffidence and the greatest pleasure that I rise to speak before you to-day. Diffidence because of my unworthiness of the honor and pleasure that I may help to keep bright the laurel that gleams above a brow frosted and seamed by the snows of more than seventy winters.

In order that you may realize how great a thing was done when sepsis was driven by Garrigues from the New York Maternity Hospital in 1883, let me remind you that it is less in measure of years than the years of a strong man's life since Oliver Wendell Holmes, in his immortal essay on puerperal fever, said so bravely: "The time has come when the existence of a private pestilence

*An oration delivered before the American Gynecological Society at Washington, May 8, 1907.

in the sphere of a single physician should be looked upon not as a misfortune, but a crime." Five years later Ignatz Semmelweis, a young assistant at the Vienna Maternity, was derided because he persistently held that every case of puerperal fever was caused by the absorption of putrid animal material.

These assertions of Holmes and Semmelweis marked the first gray gleaming of a dawn that, obscured then by the clouds of derision and apathy and the mists of imperfect knowledge, has gone on to the clear light of a glorious day. Now we know that puerperal fever is puerperal septic infection; we know how to prevent it, and we cannot shift the responsibility.

At the time of the epidemic at the New York Maternity conditions were different. The significance of the part played by the various bacteria was only beginning to be appreciated. It is true that Playfair in the fourth edition of his "Midwifery," issued in 1882, included all postpartum fevers under the head of puerperal septicemia; yet, he admitted, "there were facts difficult to reconcile with theory and for which we were unable to give a satisfactory explanation."

Gusserow, in the same year, in commenting on the factors influencing the mortality at the Maternity of the Charity Hospital in Berlin, admits that *locality* has not the absolute importance it was formerly supposed to have and that Semmelweis was correct in defining puerperal fever as a wound infection. Thomas More Madden, at the meeting of the British Medical Association in August, 1883, held that it did not matter by what term we distinguish the malady, provided we recognize that there is "a specific infectious disease consequent on parturition" and that it is largely modified by the intensity of the septicemic condition, by the previous condition of the patient, and by the prevailing epidemic constitution of the atmosphere. He holds that large maternity hospitals would be desirable if they were only safe, but that in all hospitals where a number of women are confined together a "specific puerperal atmosphere" is necessarily created.

Kinhead, Professor of Obstetrics at the University of Dublin, taught that "such fever, from whatever sources arising, except septicemia, is a specific infectious disease," and that "it occurs epidemically and sporadically, like any other infectious disease."

In the winter of 1883-84, partly because of the dreadful conditions prevailing at the New York Maternity, the subject of

puerperal fever was prominently before the profession. In a somewhat heated discussion before the New York Academy of Medicine in December of 1883 T. G. Thomas defined puerperal fever as "an infectious disease due, as a rule, to septic inoculation of wounds in the genital tract." He held that some toxic agent existed, but would not admit that the "round micrococci" could be important factors in its etiology. Polk thought Thomas should have planted himself squarely upon the view which regards puerperal fever as identical with septicemia. At a later meeting For-dyce Barker, who still clung to the old dogma of a specific disease, ridiculed these ideas. "Does every parturient women," he asks, "in performing the function of maternity, like the scorpion that carries in its tail an agent for suicide if death be threatened by fire, physiologically generate an equally fatal poison in a corresponding locality?" If so, it seems to him evident that "the state should make childbearing a penal offense for families that did not have means enough to carry out elaborate antiseptic requirements."

It is seen by these references that while the bulk of the profession held more or less to the idea of a septic poison, there was much concerning the exact nature of this poison that was vague, for the science of bacteriology was yet young and the old idea of a specific puerperal fever was hard to kill. Stadfeld, at the Copenhagen Maternity, had used carbolic acid as a disinfectant in his wards since 1870 and similar measures were employed by most obstetricians. These early efforts, however, were but gropings toward the light and were only moderately successful. Outbreaks of puerperal fever still frequently occurred and there were still those who believed in the "epidemic influence of the

But the time and the opportunity were waiting for him who should have the clear insight and the courage to put aside the ancient dogmas of the established order and to replace them by the new ideals of surgical cleanliness.

In 1881 the mortality at the New York Maternity Hospital was thought to be very low, as it was only 2.36 per cent. In 1882 it had risen to 3.25 per cent. In the first nine months of 1883, with 345 deliveries, 30 women died and the serious morbidity was enormous. In September the conditions were at their worst. Ten of the women delivered during the month died, about one in four, and the survivors escaped miserably with their lives.

At this time (October 1) the rotation of service brought Dr. Henry J. Garrigues again in charge. In the fullness of maturity, energetic, thoughtful, calm, he proved to be the man superior to the emergency. Appalled at the frightful conditions, he had already formulated and at once carried into effect a detailed plan for driving out the pestilence. This plan was original in its detail, showed a broad comprehension of the principles of asepsis, was brilliant in its achievement, and of far-reaching influence on the practice of obstetrics. In brief it was this:

Rapid alternation of wards was secured, so as to allow frequent fumigation with sulphur, followed by scrubbing with soap and water and by a 1-1000 bichloride solution. Fresh bedding was furnished at each change. The floors were sprinkled four times daily with the bichloride solution. All visitors were rigorously excluded. Doctors and nurses employed in the maternity were not allowed to enter the other hospital wards or the dead house. The patient had a bath and clean linen beforehand and on entry to the delivery room the abdomen, genital region, buttocks, and thighs were washed with soap and water and then with bichloride solution. The vagina was irrigated with two quarts of the solution from a glass fountain syringe with glass nozzle. The rubber sheet on the delivery bed was frequently renewed and washed before each delivery with a 1-1000 solution.

No vaginal examination was allowed except after the hands had been thoroughly scrubbed with soap, hot water and a stiff brush and soaked in a hot 1-1000 bichloride solution.

When the head appeared at the vulva a piece of gauze soaked in the bichloride solution was applied and kept there. After the expulsion of the child the genitals were kept covered by a similar compress. The placenta was expressed by Credé's method so that it might not be necessary to introduce the finger inside the vulva. If it was necessary to introduce the finger to remove placenta or membrane the vagina was washed out, otherwise not.

Intrauterine injections were used only when the hand or instruments were introduced into the cavity of the uterus, or after the birth of a macerated child. After the expulsion of the placenta the vulva and adjacent parts were washed out with the solution and the vulva covered with a large gauze compress wet with the solution. Before each washing the nurses disinfected their hands as before labor. No vaginal injections were used ex-

cept in fetid lochia. Every substance brought in contact with the genitals was soaked beforehand in the solution.

There are some of you who may remember the ridicule or skepticism that greeted the announcement of these measures; there are many more of you who remember how the pestilence gathered its terrors to itself and fled away in a night—and it has never returned.

On December 21, less than three months later, Garrigues, in reporting the result of his work, was able to say: "The effect of the treatment has been wonderful. As if by magic all trouble disappeared. Ninety-seven women have been delivered since its introduction and not only has none of them died, but there has scarcely been any disease among them—only three had any rise of temperature. The pavilions are scarcely recognizable. Where we used to have offensive odors, feverish, prostrated, or despairing patients, overworked nurses, and despondent doctors, the air is pure, the patients look well, their temperatures are normal, the nurses are cheerful, and the doctors happy."

Could there be a greater triumph than this? Was ever greater lesson taught more quietly? What battle of the greatest general of the world's red fields was ever fraught with consequences more momentous?

The lesson was taught to the world, and the world has heeded it well, for even to-day we acknowledge its influence. "Peace hath its victories far more than war," yet we do not beat the drums when lives are saved, or sound the bugles when disease is made to flee. The world has ever held him the hero who has led victorious armies in triumph across fields strewn with dead and dying men. Is he less worthy to be called a hero who has led victorious against the legions of death?

Garrigues, the man who saved and taught us how to save the mothers of men, lives to know we know the value of his deed; lives to know the place of honor he holds in the hearts of his fellows; lives in the pulsing blood of happy wives and mothers, and has an immortality in thousands yet unborn.

ECTOPIC GESTATION WITH SPECIAL REFERENCE TO THE TREATMENT OF TUBAL RUPTURE.*

BY

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LAWSON TAIT, to whom gynecology is greatly indebted for his elucidation of the subject of ectopic gestation, taught that rupture, occurring not later than the twelfth week, was the universal termination of tubal gestation. This view was apparently accepted without contradiction for a number of years, when, in 1887, Werth drew attention to the possibility of tubal abortion, and gradually the latter has come to be recognized as the more frequent outcome of tubal pregnancy.

Whitridge Williams, in reviewing the literature down to about 1903, stated that whereas in 1892 Schrenck found only six cases of abortion in 610 cases of tubal pregnancy collected from the literature, the more recent reports of Martin, Wormser, Mandl and Schmidt, Fehling and Glitsch, comprising 289 cases, showed that 78 per cent. ended by abortion and only 22 per cent. by rupture. According to Martin, "this termination is the general rule, spontaneous rupture occurring only in those cases in which occlusion of the abdominal end of the tube precludes the possibility of an abortion, or in which the ovum, being inserted in a hernia of mucosa, burrows directly through the tube wall."

Later reports by other authors vary within wide limits, some giving a lower and some a higher ratio of abortion to rupture. Thus Runge, reporting 125 cases of recognized ectopic gestation from the Charité and Polyklinik in Berlin, states that there were 73 cases of tubal abortion (58 per cent.), 47 cases of rupture (37 per cent.), and 5 intact tubal pregnancies.

Bandler thinks that the proportion of abortion to rupture is probably as large as 8 or 10 to 1, and makes mention of 60 cases of pelvic hemocele in Schauta's clinic, 55 of which had formed after tubal abortion and 5 after rupture of the tube.

*Read before the American Gynecological Society at Washington, D. C., May 7, 8, 9, 1907.

Hirst, giving a series of 74 cases of ectopic gestation, says that in a large majority a tubal abortion had taken place.

Newell, in the *Medical and Surgical Reports of the Boston City Hospital for 1905*, gives a summary of 60 cases of ectopic gestation met with during the previous five years. A careful pathological report was made in every case. All were cases of tubal pregnancy, the tube being intact in 14, abortion present in 22 (36.6 per cent.), and rupture of the tube in 22 cases (36.6 per cent.); rupture into the broad ligament was reported twice, but here the diagnosis was open to question, as the definite pelvic relations were not absolutely made out. The author recognizes that these figures do not agree with the ordinary statistics (that tubal abortion occurs in 75 per cent. of cases of tubal pregnancy), and attributes the discrepancy to the fact that the hematocele in tubal abortion is absorbed spontaneously in a large proportion of the cases, and that only such cases come to operation as present symptoms which demand interference.

In the *Penn. Medical Jour.* for September, 1906, C. P. Noble publishes an analysis of the 91 cases of ectopic gestation, which were operated upon by him during the previous sixteen years. His cases are classified as follows:

Unruptured tubal pregnancy... 7

Ruptured tubal pregnancy.....14 (15 per cent.)

Tubal abortion70 (77 per cent.)

The Treatment of Ectopic Gestation.—It is hardly necessary to refer to the obsolete methods for a while in vogue which aimed at the destruction and the subsequent absorption of the products of an ectopic gestation through the injection of certain drugs into the fetal sac.

The application of electricity to the same end is likewise only to be condemned.

If we may judge from statistics, in no other fields has surgery achieved more brilliant results than in the treatment of ectopic gestation. But it is so often difficult to give figures their "proper bearings," and it is so easy for writers to overestimate the importance to be attributed to this or that factor in their enumerations.

Two plans of treatment present themselves, viz., the expectant and the operative, the methods varying widely according to the stage that the pregnancy has reached.

A. Martin has shown that 36.9 per cent. out of 265 cases of ectopic gestation recovered under an expectant plan, whereas 76.7 per cent. out of 515 cases recovered under operative interference.

Schauta, after a careful study of the literature (1891) found that 123 cases operated upon and 121 cases treated without operation, presented a mortality of 5.7 per cent. and 86.9 per cent., respectively.

However, we are inclined to the view of Herman, who says, in the *British Medical Journal*, January, 1904, that there ought to be no question of a comparison of the two methods, as each mode has its own place, and furthermore, we feel that every case should be looked upon and studied as "one unto itself."

The majority of observers have agreed that immediate operation is called for in one class of cases, viz., the early cases, in which a positive or highly probable diagnosis of ectopic gestation can be made before rupture or any severe hemorrhage has occurred. And with this view I fully coincide.

The object of this paper is to consider the treatment of another class of cases, regarding which there is still quite a diversity of opinion. We refer to those patients whom we find in a state of collapse following the rupture of an ectopic gestation.

We shall cite the views of several recognized authorities, discussing different phases of these "border line" cases, as they may present themselves.

The position taken by some of the authors in their writings is not clearly defined. Thus, to quote from Kelly's *Gynecology*:

"Patients have been successfully operated upon in profound collapse, but I would rather wait a few hours, in some cases, if there are any decidedly encouraging signs of improvement, to gain a maximum effect from stimulation, and then to operate."

What if the signs of improvement do not appear?

Williams, in his *Text-book of Obstetrics*, says:

"Whenever we see a possibly pregnant woman in a state of profound collapse, and presenting a deathly pallor of the face, a subnormal temperature and other symptoms of intraabdominal hemorrhage, immediate operation is demanded, unless, indeed, her condition is so desperate that death is imminent."

Malcolm Storer expresses his convictions as follows:

"In cases seen immediately after rupture—in collapse and acute and profound anemia—while recognizing that the waiting

policy has able advocates, I personally feel that I should prefer to operate at once, no matter how grave the condition, or rather, the graver the condition the more prompt would be my attempt to reach the bleeding point. While twelve hours or so may give a patient some hope of recovery from the primary shock, we have no certainty but that meanwhile blood may be coming out of the torn tube quite as rapidly as we can introduce salt solution under the breasts."

According to Storer, one advocate of the waiting policy has expressed skepticism as to a woman's bleeding to death from a ruptured tube, saying that the hemorrhage will stop of itself when the patient is sufficiently exsanguinated. I must confess that I have come to believe that such a view is worthy of most careful consideration, and that it would be very difficult to show that other factors than the actual loss of blood do not play the main part in the fatal termination in such a case.

Storer does not think the risk that the shock of an operation may take away the woman's one chance compares with that of her bleeding to death. His rule is to get ready for operation, stimulating the patient meanwhile. If she reacts and holds her own, wait; but at the first sign of losing ground operate. If there is no reaction, operate and give her one chance.

He reports three cases in which the patients were in collapse at the time of operation, two of whom he lost. In each instance, he states, a large quantity of blood was found in the abdomen, and bleeding was still going on from a ruptured tube.

Cullen has reported a similar case, where 2.5 liters of blood were found in the abdomen, and from a small opening in the posterior surface of one tube enough blood was oozing to fill a teaspoon in one or two minutes. Recovery followed.

It will always remain a question in such cases whether the manipulations of the structures at the time of operation are not responsible for the hemorrhage which is found "still going on."

Vineberg, in the *Medical Record*, June, 1906, reports a series of 53 cases operated upon by him, of which there were 14 instances where a very large quantity of free blood was present in the abdominal cavity and the patients were "in a most profound anemia." In several of the patients there was no radial pulse at the time of operation. "It is amazing to see," says Vineberg, "how in these cases an apparently moribund patient can

be brought to life by opening the abdomen rapidly, ligating bleeding vessels, and injecting saline solution into the veins of the arm." There was but one death in his entire series, and this from double pneumonia on the twenty-first day after operation.

Vineberg feels confident that some of the collapse cases are lost through overhaste on the part of the operator, time not being taken to see whether there be any further oozing.

Of the 60 cases reported by Newell, to which reference has been made, there were 12 patients, who entered the hospital with marked signs of internal hemorrhage and shock. In only two instances, however, was death attributed to the latter cause. His total mortality was nine, tubal rupture being found in seven of these cases.

Says this author: "In cases who are first seen *in extremis* from shock and hemorrhage, a reasonable interval before operation should be granted to allow for the reaction which usually follows the cessation of hemorrhage. If, on the other hand, no improvement follows within a few hours, or if the patient's condition continues to fail, it may be taken for granted that hemorrhage is still going on, and immediate operation, followed by heroic stimulation, offers the best chance."

In Noble's 14 cases of ruptured tubal pregnancy there were six deaths. All were in bad condition at the time of the operation, a number were moribund, and in eight the abdomen was filled with fresh blood. To quote from his article:

"With free and continuing hemorrhage, shock, and anemia, the prospect of such patients with operation is far from good, the mortality in this group of cases having been 42 per cent. Without operation, however, it would have approached 100 per cent.

"With a continuing hemorrhage operation is urgently demanded, and hemorrhage is usually persistent in cases of tubal rupture.

"In exceptional cases, in which a large amount of blood has been lost and the condition of the patient is serious, the question will arise as to whether operation shall be immediately performed or postponed until improvement has occurred. The proper course in such cases depends upon whether hemorrhage is continuing or has ceased, and also upon whether the patient is so situated that the operation can be performed immediately should evidences of recurring hemorrhage become manifest.

Errors should be made upon the side of prompt operation rather than upon that of undue waiting."

Among the German writers we find advocates of both plans of treatment for the class of cases under consideration.

v. Winckel operates in all cases of free hemorrhage into the peritoneal cavity, as soon as possible, and without regard to the shock of the patient at the time. He argues that, while with the weakening of the heart's action in cases of severe hemorrhage the bleeding ceases, yet as soon as the heart begins to work better a recurrence of the bleeding from the ruptured vessel sets in.

Bumm advises in cases of free hemorrhage immediate operation. If the pulse is small and frequent, operation should not be postponed for even half a day; the worse the general condition the more promptly must it be done.

Fritsch expresses his views as follows:

"If a diagnosis has been made of internal hemorrhage from a recently ruptured ectopic pregnancy, absolute quiet until the operation is unconditionally necessary. I would question whether an ice bag to the abdomen has any advantage. To give subcutaneous saline injections before the operation is also wrong; I advise them directly after the operation, likewise bandaging of the lower extremities.

"What course to take is difficult to decide upon, when one sees a case where the anemia is marked. To be sure one can and must make an attempt to save life, but often we operate too late from extraneous reasons, not dependent on the physician. Between the time of making a diagnosis and the completion of the preparation for operation too much time is lost. So much blood is poured out that the patient is unable to endure the effects of an interference as significant as a laparotomy imposes. It will often depend on the incalculable, individual resistance and tenacity of life of the patient whether she withstands the interference."

From Ahlfeld we quote the following timely words:

"If rupture has occurred several hours before the patient is first seen, and she has recovered somewhat from the initial shock, so that the pulse can be plainly felt, it is a question whether it is not safer to keep the woman perfectly quiet; the blood poured out around the ruptured tube has probably come to surround the point of rupture as a tamponing mantle. Place ice bags or sand bags on the abdomen, support the patient's strength, above all give her bodily and mental quiet.

"Be ready, however, to employ surgical interference should there be a recurrence of the bleeding."

To summarize somewhat. It is generally taught that in cases of tubal rupture in the early months of an ectopic gestation death is almost invariably due to the hemorrhage that takes place, and accordingly the majority of surgeons advocate opening the abdomen as soon as possible and ligating the bleeding vessels. If the total number of deaths could be known that have followed immediate operations for tubal rupture it would be found a considerable one. Particularly is this the case in the country, or in other places removed from the skill of the expert. Therefore when surgeons advise that all such patients should be operated upon immediately, it is easily seen why the treatment might be almost as dangerous as the pathological condition. Naturally the physician in charge of such a patient would feel that an operation should be done at once and that he must do it. Very often, however, such a man has had little or no experience with the performing of an abdominal operation. Under these circumstances the patient's life might be sacrificed simply from the shock of the operation alone. In some instances also a fatal result might follow from the introduction of an infection. For my own part I believe that when we are called to see a patient who is suffering from a tubal rupture, in the great majority of instances the active bleeding has ceased. Now if such a patient is given an anesthetic and an abdominal operation is carried out, the immediate shock of the operation may well be sufficient to cause her death, but to this is added the risk of producing a fresh hemorrhage by the manipulation of the tissues. Undoubtedly in this way a certain number of the immediate or early deaths following the operation may be accounted for. As a rule, after opening the abdomen in such cases, we find a considerable amount of fluid blood present, but it is not often that we see an actually bleeding vessel. When we find spurting or oozing from the rupture in the sac it is generally caused by the blood that has been held under tension in the sac. A large proportion of ectopic gestations are situated in the ampullary portion of the Fallopian tube, and when the embryo passes out through the fimbriated extremity of the Fallopian tube, the amount of blood that is poured out at this time is often not enough to produce a fatal result. Most of these cases, therefore, would undoubtedly recover without any further serious symptoms. For this reason all statistics dealing with the number of deaths

due to a ruptured ectopic gestation are somewhat fallacious. From my experience in the clinical and experimental side of this work for the past three or four years, I feel positive that a fatal result due to the loss of blood alone is exceptional. From our examinations also of a considerable number of ectopic sacs in which a rupture has taken place, we feel sure that it will not often be found that the large vessels, such as the uterine and ovarian arteries, have been torn. During the past four or five years we have carried out with satisfactory results the following method of treating all our cases of ruptured ectopic gestation. If there are signs of improvement in the patient's condition (and this in our experience always takes place), we keep the patient under further observation. The change for the better is brought about by carefully stimulating the patient by means of saline infusions under the breasts, and in some instances also by means of hot saline enemata. If the patient is not vomiting or is not nauseated, we administer a stimulant in small quantities by the mouth. In addition to this we give morphine hypodermically for the pain and the nervousness. External heat is also applied to the body, and the lower end of the bed is slightly elevated. The sulphate of strychnine is also given hypodermically in doses of 1-10 to 1-20 of a grain every half hour or so, according to the indications. While this treatment is being carried out the operating room is prepared, so that it can be used at a moment's notice. We have also carried out this treatment in those cases that we have seen for the first time at the patients' homes. Then as soon as the woman had recovered from the shock of the rupture she was transported to the hospital, where an operation could be carried out at any time that the necessity might arise. Every patient in our series has gradually improved so that after two or three days, and in some instances after twelve days' time, the operative procedures have been carried out with very little if any shock to the patient.

ANALYSIS OF A SERIES OF TWENTY CASES OF ECTOPIC GESTATION.

From an analysis of the twenty cases of ectopic gestation that have come under our personal observation, and received surgical treatment, we may summarize our findings as follows:

1. *Age of Patient.*—The youngest patient was twenty-three, the oldest forty-three. Between the second and third decades there were seven, between the third and fourth twelve; one patient was above the age of forty.

2. *Previous History.*—Fourteen patients had given birth to

children, four were primiparous and ten multiparous (2-6). There were six nullipara.

A history pointing to previous pelvic inflammatory disease was recorded in only three of the cases. Miscarriage had occurred in ten patients.

There had been a cessation of the menstrual flow during a period ranging from five to twelve weeks prior to admission in ten of the patients. In two an irregular flow had been noticed for a short while previous to the acute onset of the illness, and of the remaining seven there had been no menstrual disturbance in four; the history was unsatisfactory in three.

3. *Present Illness.*—This dated from four days to eight weeks prior to the time of admission. Exacerbations of the primary attack occurred as late as the day of admission in a few cases.

The onset of the attack was in nearly all cases with pain, which was described in thirteen instances as being "sudden and sharp," generally in the lower abdomen, but in one case it was most intense in the epigastrium. In three patients the pain was of a "cramping" or "bearing down" character, while in four it was spoken of as being merely severe. In a number of instances this symptom was chiefly localized to one side of the pelvis.

Pain continuous or increasing in severity to the time of admission was noted in nearly every case of tubal rupture, whereas in cases of tubal abortion there was usually a history of recurring attacks of pain at intervals of a few hours to a day or so.

Fainting attacks had occurred in four instances, two of which were cases of tubal rupture, the other two of tubal abortion and pelvic hematocele respectively.

Five patients had had nausea and vomiting.

A bloody vaginal discharge, varying from slight to a profuse flow, and beginning with the onset of pain or some time afterwards, was noted in fifteen instances.

4. *Condition on Admission.*—In five of our patients the condition was regarded as serious and contraindicatory to immediate surgical interference. All of these showed evidences of shock, and a marked anemia was present, the lowest hemoglobin record (Tallqvist) being sixty per cent. The general condition of the remaining fifteen patients was "fair" to good, none exhibiting symptoms, however, that called for immediate operation.

Signs on bimanual examination pointing to a probable ectopic gestation were noted in eight of our cases.

The temperature was normal or above in eighteen patients, the highest being 101.4° , not definitely given in one. One patient in collapse had a temperature of 96° F.

5. *Time of Operation.*—No patient was operated upon earlier than the day after admission (18 to 24 hours), and there were only three who came to operation so soon. In one of these patients a diagnosis of pelvic abscess was thought to warrant an early vaginal puncture. The other two patients were in sufficiently good condition to undergo a laparotomy at the time.

The remainder of our patients were operated upon at periods ranging from three to twelve days after admission, the average being five days, eight of the seventeen on the third day.

Of the five patients, who were in grave condition at the time of admission, operation was not considered advisable until the third, sixth, eighth, and twelfth day afterwards, respectively, in four instances, the other patient being the one mentioned above as coming to operation on the day after admission.

6. *Condition at Operation.*—It will suffice to say that of our five serious cases all but the one operated upon the day after admission showed considerable improvement in their condition over that when first seen. The usual measures of stimulation and keeping the patient quiet had been employed.

7. *Operation.*—There were fourteen patients treated primarily by abdominal section, four in whom only a vaginal puncture was done, and two in whom vaginal puncture was followed by abdominal section, in the one case immediately, in the other twenty-four hours later on account of a suspected continuance of hemorrhage. Of these latter two cases one was an instance of tubal rupture, the other of ovarian pregnancy.

Tubal rupture was found at operation in nine cases, six times on the left side, three times on the right side.

Tubal abortion had occurred in four instances, three left sided. An intact tubal pregnancy was met with twice, on opposite sides. Pelvic hematocele was the diagnosis in four patients.

The unusual case of an ovarian pregnancy has been mentioned. Adherent structures on the two sides called for a bilateral salpingo-oophorectomy in three patients. A unilateral salpingo-oophorectomy was done in eleven instances, and the opposite tube removed in nine. Both tubes were removed in two cases.

The appendix was found involved four times; once it was ad-

herent, and in three instances was deeply congested. It was removed from eight patients.

Clotted blood or bloody fluid or the two together in a large quantity were found in the peritoneal cavity in seven of the abdominal sections (six tubal ruptures and the ovarian pregnancy). Where an estimation of the quantity is given, the figures vary from 700 to 1,500 c.c.

We wish to here raise the question whether one can judge of the actual loss of blood to the patient from the amount of bloody fluid present in the abdomen, as some of the latter is probably a serous exudation resulting from an irritation of the peritoneum by the blood that escapes into the abdominal cavity.

Drainage was employed in three of the abdominal section cases, once by the vagina in a primary section, once through both abdomen and vagina, and once per vaginam alone, respectively, in the two celiotomies that followed vaginal puncture.

8. *Convalescence and Results.*—Eleven patients made an uninterrupted recovery—nine of the celiotomies and two of the vaginal punctures. In two of the section cases, one for an ovarian pregnancy, the other for tubal rupture, convalescence was slow; in both of these patients there was a marked anemia, and a left brachial thrombophlebitis developed in one of them.

There were evidences of a right popliteal phlebitis in one section case. In another bronchopneumonia was a complication.

Following abdominal section for tubal abortion a concomitant uterine pregnancy ended in abortion on the fourth day after operation.

Infection of the abdominal incision took place in one instance—a tubal rupture.

Two of the patients treated by vaginal puncture for hematocele had a considerable elevation of temperature during the first twelve to fifteen days, and one of them a good deal of abdominal pain. Both were discharged free from pain, but with adherent pelvic structures.

There was one death in our series. This occurred in a patient whose convalescence from a celiotomy for tubal rupture had progressed favorably to about the tenth day, when signs of ileus began to manifest themselves. The abdomen was reopened on the next day; a volvulus and intestinal adhesions were found present. Death ensued one hour later.

9. *Pathologic Findings.*—There were two specimens of intact

tubal mole. Associated with one of these was a hematosalpinx of the opposite side.

Expulsion of the ovum from the tube without rupture had taken place in four cases.

Rupture of the tube was met with in nine instances, three in the isthmus, three in the ampullar, and three in the infundibular portion of the tube respectively. Evidences of pregnancy were conclusive in all of these cases.

There was no instance of intraligamentary rupture.

Well preserved fetuses were found in three cases, the largest being nine cm. long.

A case of ovarian pregnancy furnished a rare and interesting specimen. Partly imbedded in the ovarian stroma was a blood clot the size of a walnut, sections of which showed chorionic villi. A very recent corpus luteum was present. The tube on this side was perfectly normal save for a slight interstitial salpingitis.

Salpingitis in both tubes was present in eight cases.

A perisalpingitis on the opposite side to that involved was noted in ten instances.

Tissue removed from the pelvis per vaginam confirmed the diagnosis of hematocele originating from ectopic gestation in two cases; in two other instances degeneration of the tissues made a pathologic diagnosis inconclusive.

I am not prepared to state dogmatically that women do not bleed to death from hemorrhage following ruptured tubal pregnancies. I am of the firm conviction that surgeons are losing many of their desperate cases from overhaste in operating upon them.

The idea that the abdomen must be opened as quickly as possible after seeing one of these patients in order to check the bleeding, which may or may not be going on, seems to have taken deep root in the minds of many gynecologists. If recovery has followed the interference, "we saved our patient;" was there a fatal termination, "the patient died from the previous loss of blood."

We feel that the enthusiasm over our "happy results" has carried us too far, and that a calming restraint to our ideas is needed.

Let us consider the factor of hemorrhage in these cases and later other influences that may have a bearing on the question. Reports seldom state even in an approximate way the quantity of blood found in the abdominal cavity of the patient. Some say "a large amount," others "a very large quantity," terms which

convey but little meaning. What we should like to have in these reports would be a fairly accurate estimation of the amount of blood found present, and in addition the weight of the patient. We would then be in a better position to judge to what extent "the previous hemorrhage" has been responsible for the fatal issue in many of the cases.

Physiologists have estimated the total quantity of blood in the human body at about 7.7 per cent. of the body weight. Thus, a woman weighing, say, 130 pounds, would have a blood content of ten pounds.

Now, "just what percentage of loss," to quote from Howell, "can be borne by the human being has not been determined, but it is probable that a healthy individual may recover without serious difficulty from the loss of a quantity of blood amounting to as much as three per cent. of the body weight." This, in a woman of 130 pounds, would be a loss of four pounds, or approximately 1,650 c.c. We question whether so large an amount or at any rate much more blood is found in the average patient of the above weight as a result of hemorrhage from a ruptured ectopic gestation.

We have recently been conducting a series of experiments on dogs to see if we might not be able to throw some light on this phase of the subject.

It may be worth while to here state briefly some of our observations. In the bitch, as may be recalled, the uterus consists of the body or corpus and its two long horns or oviducts; in the latter fetal development takes place. The oviducts are connected anteriorly with the very short, slender Fallopian tubes; the outer ends of the latter lie very near the ovaries, which are situated posterior and dorsal to the kidneys. The uterine arteries are branches of the pudics, the latter being one of the two main divisions of the internal iliacs; they are vessels of considerable size, even as compared with the corresponding arteries in woman. The ovarian vessels are, on the other hand, quite small.

With these anatomical differences in mind, a brief résumé of the cases is herewith presented:

EXPERIMENTS.

Dog No. 1.—Well nourished. Weight, 6.5 kilos.

January 11. Ether anesthesia.—The abdomen was opened through a median incision 6-7 cm. long. Pelvic organs apparently normal. The outer end of the right oviduct was cut through, and the right ovary excised. There was no free bleeding at the site of the injury. The

incision was closed in layers. There was but little variation in the pulse throughout the operation. Quick recovery from ether, and an uneventful convalescence.

Dog No. 2.—Well nourished. Weight about twelve kilos.

January 25. Ether anesthesia.—Median incision four cm. long. Pelvic organs normal appearing. The right broad ligament was cut through its entire extent, the uterine vessels being severed. There was active arterial hemorrhage, the blood welling up into the abdominal wound. Incision quickly closed in layers. At the end of the operation the mucous membranes showed a distinct blanching. Pulse 140, of small size. Dog conscious thirty minutes after being put to bed. A good deal of vomiting during first six hours.

January 26.—Dog is up and walking about, showing no signs of pain. This dog escaped from her cage several days later. She had made a good recovery, so far as we could judge.

Dog No. 3.—Good condition. Weight about ten kilos. In "heat."

January 30. Ether anesthesia.—Median incision four cm. long. Pelvic organs appear congested. Outer end of left oviduct cut through, and left ovary excised. The left uterine vessels were now cut across. Free bleeding from the latter and also the ovarian. Incision quickly closed in layers. At end of operation pulse of rather small volume, rate not obtained. Dog conscious soon afterwards.

February 2.—Condition good. Dog disposed to remain quiet.

February 6.—Dog bright and active, taking her feed well.

Dog No. 4.—Well nourished. Weight about ten kilos.

February 2. Ether anesthesia.—Median incision four cm. long. Pelvic organs normal. The uterine vessels on both sides were cut across. Very free bleeding. Incision quickly closed in layers. Pulse rapid, but of fairly good volume. Dog conscious before leaving table. Given morphia gr. 1-3 hypo. at once. Thirty minutes later dog was standing and drinking water greedily.

February 6.—Dog suffered apparently but little from operation. To-day seems bright, but is not disposed to move about much.

February 16.—Dog has made an uninterrupted recovery.

Dog No. 5.—In good condition. Weight about ten kilos.

February 6. Ether anesthesia.—Median incision four cm. long. Normal appearing pelvic organs. The left ovary was excised, and the uterine vessels on both sides cut. There was the usual free hemorrhage. Immediate closure in layers. Dog conscious on reaching bed. Pulse not very rapid and of good size. Seen thirty minutes later, dog had changed position, but was then perfectly quiet.

February 9.—Dog had been doing well. Yesterday was eating. To-day does not appear so bright. Does not object to being moved. Pulse and temperature O. K.

February 16.—Rapid improvement since last note. Dog now active.

Dog No. 6.—This is the same animal used in Experiment No. I. q. v.

February 9.—Dog had made a complete recovery from first operation. Ether anesthesia. Abdomen reopened through former incision. No free fluid or clotted blood found in peritoneal cavity. There were a few delicate adhesions about the pelvic structures. The right oviduct was enlarged and bent upon itself. In the left oviduct were two fusiform swellings, the one about 1.5 cm. from the corpus uteri, the size of a pigeon's egg, the other in the outer half of the oviduct, almost as large as a duck-egg, apparently filled with clear fluid. The uterus and oviducts were now removed *in toto* by one continuous cut of the scissors from side to side. Bleeding was profuse. Immediate closure in layers. At end of operation pulse was hard to obtain, respiration shallow. Dog able to open her eyes. Seen fifteen minutes later dog was standing on all fours, lapping water.

February 16.—Dog did not appear to suffer from operation. A few

hours afterwards was walking about in her cage. No sedative was given. At present seems to be in good condition.

February 25.—Dog has apparently made her second complete recovery. Incision well healed.

Dog No. 7.—Same animal as No. 3. q. v. Dog has made complete recovery. Now bright and lively.

February 16. Ether anesthesia.—Abdomen reopened through former incision. No blood found in peritoneal cavity. A few light omental adhesions. No pulsation could be detected in the stump of the left uterine artery, nor was there any clot around it. The right uterine vessels were now cut, and temporary closure of the abdominal cavity made by placing clamps on the edges of the divided peritoneum. At the beginning of the operation the pulse rate was 128. The dog was now kept under a light anesthesia. Fifty minutes after cutting of vessels the pulse began to show an increased rate, being at this time 136. A steady rise continued during the next thirty minutes, at the end of which time the rate was 156. The clamps were now removed from the peritoneum, and the blood found in the pelvis was carefully removed with gauze sponges. No clotting had taken place. From the cut uterine active hemorrhage was still going on. No attempt was made to check the bleeding by pressure or traction on the vessel, but gentle application was made with a gauze sponge at the cut end of the artery. Cessation of the bleeding resulted at the end of about ten minutes. Twenty minutes later a subcutaneous infusion of salt-sol. (400 c.c.) was given. This was nearly all taken up in thirty minutes. It was given to see if the subsequent rise in the blood pressure would bring on a recurrence of hemorrhage from the uterine artery. No such effect was produced at the end of thirty minutes after the absorption of the saline sol. Gentle squeezing of the end of the vessel, however, was sufficient to expel the clot, which had formed, and fresh bleeding began. The experiment was brought to a close at this point, the uterine artery ligated, and the incision closed in layers at once. The pulse rate at the end of the 3.5 hours consumed in the observation was 144.

February 25.—Dog has done well from day of operation. Is now as active as ever. The amount of blood lost during the experiment was estimated approximately and found to be 240 c.c.

Dog No. 8.—Young bitch. Poorly nourished. Weight about four kilos. Mucous membranes pale.

February 25.—Median incision 6.5 cm. long. Uterus very small, the oviducts slender, cord-like structures. Evisceration of both ovaries, the uterus and oviducts in toto. There was very free bleeding from all the vessels. Immediate closure in layers. But slight change in pulse during operation. Fifteen minutes later dog appeared to be having a hard, shaking chill. Was conscious, but not able to hold up her head.

February 26.—Dog is bright, but moves about very little.

March 1.—Dog appears to be gaining rapidly. Is now walking about her cage. Very anemic. Ether anesthesia. Abdomen reopened through previous incision. No free blood in peritoneal cavity. Omentum and intestines adherent in places to bladder and pelvic wall and rectum; all easily separated. Around the stump of the uterus a small blood clot was adherent. No other clots found present. Forcible manipulations of the stumps of the uterine vessels produced no active bleeding, only an oozing. Dog went into sudden collapse. Revived by artificial respiration.

Dog No. 9.—In good condition. Weight about 4.5 kilos.

February 26.—Ether anesthesia. Median incision 6.5 cm. long. Total evisceration of intra-abdominal genitalia as in previous animal. Profuse hemorrhage. Immediate closure in layers. Mucous membranes became greatly blanched. At close of operation pulse rate was 180, shortly afterwards becoming almost imperceptible. Soon after reaching bed dog was conscious, but made no attempt to move.

March 2.—Dog is bright and fairly active. Mucous membranes quite

pale. Ether anesthesia. Abdomen reopened through previous incision. No fluid or clotted blood present in peritoneal cavity. Stump of corpus uteri brought up and found surrounded by a small clot. No distinct pulsation to be made out in uterine vessels. Well marked oozing caused by active manipulations of pelvic structures, increased by freshening cut surfaces of previous operation. Closure in layers. Pulse rapid, but of good size at end.

Dog No. 10.—In excellent condition. Weight 17.5 kilos.

March 15.—Ether. Median incision. Uterus very small for so large an animal (has never been pregnant). Uterine vessels cut on both sides. Bleeding by no means so free as in previous cases. Closure in layers. Pulse good at close.

March 18.—Dog appears as well as before operation.

Dog No. 11.—In fairly good condition. Weight about six kilos. Considerable enlargement of both thyroids.

March 18.—Ether. Median incision. Pelvic organs normal appearing. Uterine vessels of average size. Cut on both sides. Bleeding very free. Immediate closure. Pulse rapid, but of pretty good volume.

March 19.—Dog to-day is bright and playful. Abdomen reopened under ether; 1-3 drams of bloody fluid found present, and a small blood clot on each broad ligament at site of cut ends of uterine vessel. Removal of clot on right side brought on active arterial hemorrhage. Genital organs now excised in toto, corpus uteri being cut across below level of previous division of uterine vessels. There was profuse bleeding, probably two ounces escaping from abdominal cavity before closure was made. At the end of operation pulse was rapid and of small size. Mucous membranes greatly blanched. Dog able to hold up her head on reaching cage, but making no attempt to rise.

March 20.—This A. M. dog appears to have recovered well from yesterday's operation. Gets around well. While ether was being administered again dog ceased breathing, and all measures at resuscitation failed. About six c.c. of fluid and clotted blood found between bladder and intestines. Intestinal serosa pale.

Dog No. 12.—Young bitch, in fairly good condition. Weight, five kilos.

March 21.—Ether. Median incision. Uterus quite small, but vessels of good size for age of dog. Right uterine vessels cut. Free arterial hemorrhage. Immediate closure. Pulse good volume, not very rapid.

March 22.—Dog all right to-day. Under ether; abdomen reopened; 8-10 c.c. of bloody fluid and blood clots present. Left uterine vessels were cut, and bled freely.

March 23.—Dog seems rather weak to-day, but is able to get around well. Abdomen reopened. About the same amount of blood present as found yesterday. Manipulation of uterus and broad ligaments caused fresh bleeding from uterine vessels. Dog conscious at close.

March 26.—Dog somewhat dull to-day. Incision infected and gaping. Killed by forced anesthesia. Several c.c. of purulent fluid found in pelvis. (Portion of femoral vein removed for study.)

Dog No. 13.—In good condition. Weight about nine kilos.

March 25.—Ether. Median incision five cm. long. Each oviduct occupied by four fetal sacs, measuring 3.5x2.5 cm. Blood vessels in the broad ligaments dilated, the uterine artery being two mm. in diameter at junction of oviduct and corpus uteri. The right vessels were cut at this point. Bleeding was profuse. Immediate closure. At close femoral pulse was just perceptible. Mucous membranes very pale. Seen fifteen minutes later dog lay stretched out, eyes open, breathing quietly, no femoral pulse to be obtained.

March 26.—Dog appears dull, but drinks freely, and walks around well. Pulse small, 140 per minute. Mucous membranes of better color than yesterday. Given a subcutaneous infusion of salt sol., 200 c.c.

March 27.—Condition much better. Dog bright. Pulse 104, regular,

of fairly good size. Given morphia, gr. 1-3 hypo., one-half hour before being etherized. Abdomen reopened. Several c.c. of bloody fluid and clots present. Proximal ends of cut uterine vessels closed, but good pulsation still present in artery. The fetal sacs on the left side were brought out and opened by longitudinal incisions, which were further torn apart with forceps. These tears were made from the distal sac inwards on the inferior, the superior, the anterior, and the posterior surfaces of the oviduct respectively. There was rather free bleeding from one of the torn sacs. Immediate closure. Seen one hour later dog was still prostrated; pulse 120, of fairly good volume.

March 28.—Dog in excellent spirits to-day, quite active. Abdomen reopened under ether. A small quantity of fluid and clotted blood present. Some light adhesions about left oviduct. Mucosa of latter everted at sites of previous tears. Good pulsation still present in proximal stump of right uterine artery. Distal portions of the right vessels severed again and the fetal sac adjacent to the corpus uteri on this side torn open. All the left sacs were again cut open in different places, and the left uterine vessel severed. There was the usual free hemorrhage. Dog conscious on reaching bed; pulse very rapid and small.

April 2.—Dog rather dull yesterday and to-day, but gets around well. Has shown no pain. Abdomen reopened for the fourth time this A. M. Several c.c. of dark, bloody fluid present. Bladder much distended. Omentum adherent to fetal sacs. The left uterine vessels were thrombosed in their severed ends. Definite pulsation in the artery could not be made out on either side. The genital organs were now removed, the right ovary being unintentionally left in. The bleeding from the freshly cut uterines and the ovarian as well was very free. Immediate closure. At the end of operation femoral pulse was 140-150, irregular, and small. Tongue and mucous membranes blanched. One-half hour later given morphia, gr. $\frac{1}{4}$ hypo. Dog lying with eyes open, but not making any effort to move. Respiration rather shallow, but not rapid. A tight binder was placed around the abdomen, and the dog left in Trendelenburg position. Three hours later condition was about the same. Given subcutaneous infusion salt sol., 325 c.c. This was promptly taken up, with a slight improvement in the pulse.

April 3.—Twenty-four hours later dog found in much better condition, able to be on her feet, cheerful, and taking nourishment well. Pulse 120, regular, of fairly good size.

From these experiments we feel justified more and more in believing that the intra-abdominal hemorrhage, such as we meet with in women in collapse from ruptured ectopic gestation, is not sufficient in itself to cause a fatal termination in these cases.

Cases in which the loss of blood *per se* would be sufficient to bring about a fatal termination would seldom be seen in time to save the patient; and it is my firm conviction that in such cases only very rarely (possibly never) is a patient saved by operation. Unfortunately, in not a few of the successful cases reported the details from a pathological standpoint are too meager to enable us to judge accurately of the exact conditions that existed.

It will doubtless be maintained by some that our experimental work has shown nothing more than that the dog can withstand a greater loss of blood than the human—a recognized fact. And yet it seems to us fair to assume that in five of our experiments we

made the tests sufficiently severe to more than equalize the factor of resistance to the loss of blood in the dog, as compared with that of the human being under fairly similar conditions.

In other words, taking into consideration this difference in resistance by cutting both uterine arteries, and in some instances both ovarians as well, we subjected our dogs to a risk of bleeding to death as great as that incurred by the average woman suffering from a ruptured tubal pregnancy.

How then shall we explain, to what shall we attribute the fatal ending of so many of the serious cases of ruptured ectopic gestations? And what shall be our treatment?

In our view of these cases we feel that due consideration must be accorded to other factors than hemorrhage, potent as it may be, that jeopardize the lives of our patients.

Let us recall how in many of these cases the attack comes to the patient as a stroke of lightning out of a clear sky, and with its accompanying pain brings to the woman's mind the fear of impending death.

We know so little of what we call "shock" that we cannot estimate it in any definite term, and yet we feel it must play an important rôle in rendering the patient's condition so serious so soon after the onset of the attack and before there is any great loss of blood.

Add to this the moving of the patient from her room to the hospital, the dread of an operation, and finally the operation itself, and have we added to or subtracted from our patient's chances of recovery?

Whatever we do we must lose some cases, but I believe that our percentage of fatalities will be lower if we refuse to add shock to shock, and rather are satisfied to assist nature to bring about reaction before proceeding to a serious operation.

It gives me great pleasure to acknowledge the valuable help of Dr. M. B. Bonta, the late resident gynecologist at the Lakeside Hospital, in the preparation of this paper.

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DYSTOCIA FOLLOWING VENTROFIXATION OF THE UTERUS.

BY

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SINCE operative procedures have been employed with the object of correcting retrodeviations and descensus of the uterus, cases of more or less serious disturbances of pregnancy and parturition have occasionally been reported. My object in presenting this paper is to consider briefly the principal operations employed for the relief of displacements with reference to their influence upon subsequent pregnancy; to consider the treatment of certain cases of dystocia resulting from the operation, and to report two cases in which laparotomy with separation of adhesions fixing the uterus to the abdominal wall was performed at term and labor terminated per vias naturales.

The operation of vaginal fixation was soon discarded by practically all surgeons on account of the frequent occurrence of serious dystocia. Ventrofixation or ventrosuspension, on the other hand, in the vast majority of cases was followed by normal pregnancy and labor, and was regarded by most gynecologists as a perfectly safe procedure, while it was also unquestionably the most satisfactory method of permanently correcting the displacement. However, with the great increase in the number of cases operated upon during the past few years, instances of grave complications, sometimes involving the life of both mother and child, have become more frequent, so that at the present time the advisability of performing any intraabdominal operation for the relief of retrodisplacement is often questioned, and the operation of ventrofixation is generally condemned. The analytical reviews of the reported cases of dystocia following fixation operations, published by Andrews and Seegert, have shown that serious trouble occurs only in cases where the uterus is fixed by broad, dense adhesions, and that where it is merely suspended by slight adhesions to the parietal peritoneum the course of a subsequent

pregnancy is practically normal. Holden's investigation of 900 cases of ventrosuspension, performed in Dr. Kelly's clinic, showed that no serious disturbances occurred in the eighty-three subsequent pregnancies. Unfortunately, however, in some cases, owing to infection of the wound, injury to the surface of the uterus by tenacula, needle-hole hemorrhages due to excessive vascularity of the uterus when inadvertently operated upon during early pregnancy, etc., a firm fixation has resulted where a simple suspension was intended. On this account operations which aim to correct the displacement by means of extra- or intra-abdominal shortening of the round ligaments are generally regarded as being more advisable during the childbearing period. Alexander's operation is the simplest method of shortening the ligaments, but is only applicable to cases of uncomplicated retroflexion and is also followed by a rather large number of relapses. The operation devised by Gilliam seems at present to be the most generally useful, but has still to stand the test of time, both in regard to its permanent adequacy and with reference to its freedom from later complications. While no cases of dystocia following this operation have so far been recorded and are less likely to occur than in cases of direct fixation of the fundus, it is possible that, as sometimes happens with Olshausen's operation, infection of the attached proximal end of the round ligaments may result in a rigid fixation of the cornu and cause subsequent dystocia due to asymmetrical expansion and partial torsion of the uterus.

The chief complications which may follow ventrofixation of the uterus are: Excessive pain; hyperemesis; abortion or premature delivery; dystocia due to upward and backward displacement of the cervix, asymmetrical expansion of the uterus, and transverse position of the fetus; postpartum hemorrhage; rupture of the uterus; inertia due to excessive thinning of the posterior wall. I shall only consider in detail the different causes of dystocia.

A high position of the cervix is one of the commonest causes of dystocia following ventrofixation. This condition was noted in twenty-two of the cases collected by Andrews, exclusive of Noble's cases, *i.e.*, in more than eleven per cent., and in eighteen of the twenty-one cases of Cesarean section collected by Lynch the cervix was described as being at or above the level of the promontory. During labor the cervix is usually drawn up still

higher, and the force of the uterine contractions is directed toward the sacrum instead of in the pelvic axis.

Irregular expansion and doubling in of the anterior uterine wall occurs when the fundus is rigidly fixed and the normal upward expansion of the anterior wall is impeded. This may be compensated for by the backward displacement of the cervix, which allows a certain amount of downward and backward expansion of the anterior wall, while the posterior wall is displaced forward. In a number of cases, however, the anterior wall forms a tumor-like mass, which encroaches upon the pelvic brim. This mass is usually described as a thick pad of muscular tissue consisting of the excessively thickened anterior wall, but I am of the opinion that in all cases the anterior wall hypertrophies equally with the posterior; but in order to accommodate itself to the space between the fixation and the cervix, doubles upon itself, forming a sort of shelf or ridge. Williams especially noted this condition in one case, and a similar condition was observed by Noble, Bowley and Clark, Martin, Dickinson, and Gibert. In both of my personal cases this condition was present. Ill, in his three cases of Cesarean section performed on account of dystocia following ventrofixation, on liberating the adhesions before incising the uterus noted that the uterus in all cases immediately returned to the normal position, proving that the anterior wall had hypertrophied normally.

A transverse position of the fetus was noted in fifteen out of the twenty-one cases of Cesarean section collected by Lynch, and has been found in most of the cases reported since.

Rupture of the uterus has occurred in at least five cases. In Dickinson's case there was a rupture of the right side of the uterus extending from the external os to the cornu. In von Guérard's case the rupture took place at the point where the uterus was attached to the abdominal wall; while in Menge's, Brodhead's, and Clark and Bowley's cases the rupture was in the thinned-out posterior wall.

Postpartum hemorrhage was noted in only three of the cases of ventrosuspension collected by Andrews, so that the operation has evidently little influence in inducing this complication.

Inertia of the uterus appears to be relatively frequent, and is probably due to the excessive thinning of the posterior wall. This factor may have some bearing upon the high mortality following Cesarean section in these cases.

In the following two cases the abnormal conditions produced by the ventrofixation were almost identical. The fixation in the first was unintentional, probably also in the second. In both the cervix was drawn upward and backward out of reach by the ordinary method of palpation; the fetus was in the transverse position, and the anterior uterine wall encroached more or less upon the pelvic brim. In the first case pregnancy was accompanied by severe abdominal pain throughout its entire course, but in the second no untoward symptoms occurred.

CASE I.—Mrs. H. M., age thirty-seven. This patient has had eight children and two miscarriages. After the last childbirth she suffered from severe pain in the lower abdomen and back, and for this cause was operated upon in July, 1905. The operation consisted of the release of adhesions about the left tube and ovary and suspension of the uterus by means of two fine silk sutures to the peritoneal layer of the anterior abdominal wall. The incision healed per primam and convalescence was uneventful, the highest temperature being 99.4° on the third day. The scar, however, was found to be somewhat indurated. The patient was only slightly benefited by the operation. She again became pregnant in March, 1906, and during the whole course of the pregnancy suffered from severe pain in the abdomen and in the bladder. In December, 1906, when eight and a half months pregnant, she came under the care of the Mothers' Relief Society, and I first saw her in consultation with Dr. Herrinton, the attending physician, on December 11, 1906. The condition present was as follows: The fundus extended only slightly above the umbilicus and the fetus was in the transverse position with the head on the left side. A median abdominal scar about six cm. long extended upward from the symphysis. The lower half of the scar was considerably indurated and was strongly retracted. The cervix was drawn upward and backward and could only be reached by introducing the whole hand through the markedly relaxed outlet. It was soft and patulous. The anterior part of the pelvis was encroached upon by a firm tumor-like mass, consisting of the anterior uterine wall. In view of the danger attending the attempts to deliver such cases by turning and extraction, even where such a procedure is possible, and the increased danger of Cesarean section after various manipulations have been resorted to, I decided, after consulting Dr. H. A.

Kelly, to operate at term, either immediately before or at the onset of labor, with the object of releasing the adhesions, and if the abnormal position of the uterus could then be corrected, to allow labor to take place naturally; but if the malposition could not be corrected, to perform a Cesarean section. Operation at the Church Home and Infirmary, December 24, 1906. A small incision was made immediately above the old cicatrix. On opening the abdominal cavity, broad but light omental adhesions were first encountered; when these were separated the uterus was found to be held down by a dense band of tissues 3 cm. wide, 1-5 cm. thick, 5 cm. long, which extended from the lower part of the old scar to the fundus. Double ligatures of catgut were applied to each end of the band and it was then cut across. The fundus immediately began to ascend and in a minute or two the stump of the adhesion had ascended fully ten cm. On making a vaginal examination the cervix was then found to be pointing directly downward. The incision was closed with plain catgut sutures in the peritoneum, interrupted chromicized catgut in the muscle and fascia, and silkworm gut through the skin, fascia, and muscle. Labor began forty hours after the operation, the head presenting in the R.O.P. position, and the child was born spontaneously five hours later. The incision healed per primam. Mother and child were discharged in good condition at the end of three weeks.

CASE II.—Mrs. E., age twenty-five. The patient had one instrumental delivery eight years before. At that time the perineum was lacerated and not repaired. She afterward suffered from dysmenorrhea and bearing-down pain, until she was operated upon in May, 1905, when the outlet was repaired and the uterus fixed to the anterior abdominal wall. She became pregnant in June, 1906, and I saw her in consultation with Dr. Ada Thomas and Dr. Tayler-Jones at the Crittenton Home Washington, March 8, 1907. No untoward symptoms had occurred during pregnancy and the patient's general condition was excellent. The uterus extended to a hand's breadth above the umbilicus, the fetus lying in a transverse position with the head on the left side. A long broad scar extended from the symphysis to within five cm. of the umbilicus. The cervix, which was drawn upward and backward above the promontory, could only be felt with difficulty after introducing the half hand. Encroaching on the pelvis an-

teriorly was a broad fold of tissue, apparently the anterior uterine wall.

As in the preceding case, it was decided to perform a laparotomy immediately before or at the onset of labor, with the object of separating the adhesions and then, if the uterus regained its normal position, to allow labor to proceed naturally, or if releasing the adhesions was not followed by the return of the uterus to its normal position, to perform a Cesarean section. The operation was performed at the Crittenton Home three days later. A short median incision was made immediately above the old scar. On opening the peritoneal cavity the fundus was found to be held down by a broad dense band of tissue 5 cm. wide, 1 cm. thick, and about 2 cm. long, which was attached to the abdominal wall about the middle of the old incision and to the anterior surface of the fundus uteri, extending from the midline in the direction of the left cornu. The adhesion was cut after placing four fine sutures on each side to prevent hemorrhage. The fundus immediately began to rotate upward and to the left, and in two or three minutes the stump of the adhesion could be felt almost a hand's breadth above the umbilicus, a few centimeters to the left of the median line. A vaginal examination showed that the cervix now pointed directly downward. The incision was closed in layers as in the preceding case. Labor pains began about 9 P.M., and continued until midnight, when they ceased. Two hours later the patient was awakened by the discharge of amniotic fluid, but felt no pain. When seen an hour later the head was found in the L.O.I.A. position, the hands presenting with it and the cord prolapsed. The fetal heart was 168. The hands and cord were replaced, forceps applied, and the child delivered with some difficulty. The child's color was fairly good, but unfortunately all efforts to resuscitate it were unsuccessful. A laceration of the second degree was repaired with silkworm gut and catgut. The abdominal incision at the end of labor was in perfect condition and healed per primam. Convalescence was uneventful for the first ten days, the temperature not rising above 99.6°; but on removing the perineal stitches it was found that the tissue had failed to unite satisfactorily, and at the end of the third week a slight phlebitis of the left leg developed, but subsided in a few days, and at the end of the fourth week after the operation the patient was in excellent health.

TREATMENT.

The methods advocated by different writers for the treatment of serious complications following ventrofixation are as follows:

1. Freeing adhesions during early pregnancy.
2. Induction of premature labor.
3. Cesarean section.
4. Freeing adhesions at term.

If the patient is seen during early pregnancy and is found to be suffering from severe pain due to retraction of the scar, or if the uterus is found to be developing asymmetrically, and especially if the cervix shows a tendency to be displaced upward and backward, early laparotomy followed by release of the adhesions would remove the danger of serious complications later. A very small incision suffices, and there is practically no danger in the slight operation. The earlier the operation is performed the better, but the seventh month is not too late. If, however, the complication is not discovered until the last month of pregnancy, it is advisable to wait until term, since, if Cesarean section should be found necessary, it could then be performed immediately.

The induction of premature labor is generally condemned on account of the high fetal mortality, and also because it may be exceedingly difficult, even impossible, to perform. It is considered advisable in the interests of both mother and child to allow the case to go to term.

Cesarean section has frequently been performed on account of dangerous dystocia following ventrofixation. The first systematic study of these cases was published by Lynch, who collected twenty cases and added a new one. In Andrews and Seegert's articles there are seven additional cases, and since then cases have been reported by Clark and Bowley, Mary A. Smith, Boyd, Martin, J. Whitridge Williams, Bales, Funke, and Resmellé, making thirty-six cases. In the majority of these cases other methods of delivery were tried before section was resorted to, but in some, where definite indications existed, Cesarean section was performed primarily in the hope of lessening the high maternal and fetal mortality. The following analysis of the published cases shows the exceedingly discouraging results so far attending section in this class of cases.

Total number of cases, thirty-six; *maternal mortality*, thirty-four per cent.; *fetal mortality*, forty-four per cent.

Laparotomy followed by separation of the adhesions at term,

before or after the onset of labor, has been performed five times, with no maternal mortality, and the death of two infants. Goubaroff was the first to attempt this form of treatment, but on account of hemorrhage from the denuded area on the surface of the uterus, no ligatures having been applied, Cesarean section was immediately performed, mother and child living. In this case the finger-thick band of tissue forming the adhesion was cut with scissors without any attempt being made to prevent hemorrhage by means of ligatures.

Bidone was the next to perform the operation. The breech presented and the child was delivered after performing craniotomy. This writer advises performing a laparotomy with the object of liberating the adhesions at the end of the seventh month, in order that with a perfectly healed incision the force of the abdominal muscles will come into play at the time of labor.

Dickinson operated about the beginning of the latter half of the ninth month of pregnancy, after the patient had had slight labor-like pain for four days. After cutting the adhesion, the stump climbed three inches in six minutes and the return of the uterus to the normal position is described as almost spectacular. Labor began five hours later and delivery followed an easy labor of ten hours.

Vineberg released the adhesion with the finger through a defect in the anterior abdominal wall, where the drainage had been. The thin membrane covering the defect was ruptured while the abdomen was being scrubbed preparatory to section, and an opening made into the peritoneal cavity. The separation of the slight adhesion allowed the uterus to be pushed up and the cervix pulled down into the normal position, and labor was then terminated *per vias naturales*.

In the first of my personal cases labor was easy and normal. In the second an obstetrical accident, prolapse of the cord, liable to occur in any obstetrical case, although in this case probably influenced by the previously faulty position, necessitated the use of instruments in the hope of saving the child.

In view of the fact that the operation is a very simple one, practically free from danger to the mother, and requires only a very small incision, which in no case is affected by labor, it appears to me that it should be the operation of choice in appropriate cases. These cases I believe will be found to include

practically all the cases of serious dystocia following ventrofixation which are now subjected to Cesarean section, and many of those which are delivered by difficult version and extraction. The exceptions are the cases in which the pelvic measurements are much below the normal, or where, on account of severe inflammatory conditions preceding the fixation, the whole anterior surface of the uterus has become densely adherent to the abdominal wall and cannot be separated without leaving a wide defect in the surface of the uterus. Such cases are exceedingly rare and as a rule when the whole surface is attached the adhesions are light and readily separated, the uterine wall remaining intact. Hemorrhage can be controlled easily by means of ligatures or sutures. In a large number of cases the infant mortality should not be much above the average for ordinary obstetrical cases.

The adoption of such a procedure would greatly diminish the danger of the dystocia sometimes following operations for the correction of retrodeviations of the uterus. While many obstetricians and some gynecologists are inclined to condemn all operative treatment of malpositions on account of the danger of subsequent dystocia, most believe that an operation which restores hundreds of women to perfect health, after a life of chronic invalidism, is amply justified, notwithstanding the occasional occurrence of serious complications; and if the risk of a later Cesarean section could be avoided, the chief objection to the intra-abdominal correction of uterine displacement would be removed.

The occurrence of relapse of the displacement following pregnancy can be avoided by the proper management of the case during the puerperal period. Dickinson noted that six months after delivery the uterus showed no tendency to retrovert, and in both of my cases it was found in good position one month after labor. A bimanual examination should be made about the end of the second week, and if a tendency to retrodeviation is found, the uterus should be replaced in the normal position and held there with a suitable pessary until involution is fully accomplished. There will then seldom be any further tendency to retrovert.

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ABDOMINAL SIGNS OF PULMONARY DISEASE IN CHILDREN.*

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THE question of abdominal signs of pulmonary disease in children is brought to your attention to-night, not because it is an entirely new subject, nor because of any number of cases of my own to report, but more particularly because it is a subject which has not until recently been recognized either by surgeons or medical men, though the facts have been known for a number of years and isolated references can be found in medical literature as far back as the beginning of the last century. Yet it is only

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within recent times, when the subject of abdominal diseases in general has created such a widespread interest in the medical profession, that the conditions which may simulate abdominal troubles have been more thoroughly looked into. In this day, when the surgeon does not hesitate to open the abdomen for any severe continuous pain or symptoms of a serious general condition, it is indeed important that the question of a certain diagnosis should not be overlooked.

In an editorial in a recent medical journal the following story is told: "Some years ago a surgeon of national reputation in connection with this operation (for appendicitis), on being requested before a medical society to give his views as to the indications for deciding upon its performance, replied in language more forcible than elegant, "Any thundering big pain in the belly."

Many works on surgery give very little consideration to the question of differential diagnosis between abdominal and thoracic diseases. Many surgeons, unless they have had personal experience (often a sad one), are not conversant with the symptom complex of thoracic disease with referred symptoms. Indeed a great many general practitioners and even pediatricians are not at all conversant with the possibilities for a mistake in this trouble.

H. L. Barnard, in writing upon this subject, no farther back than 1902, says that many medical writers do not recognize it. "The condition is altogether unknown to the surgeons if we judge from their text books, and this is all the more unfortunate, as it is they who will open the belly of the pleuritic patient should they be ignorant of this condition, after they have caused ether to be given."

Since that time it has been mentioned quite often, but only in that perfunctory manner which says it is such a *rara avis* that it is hardly worth while giving more than a couple of lines to it. Kelly, in his large work on appendicitis, gives two or three pages to it, and as more cases are reported in the literature and a few papers written on the subject, both surgeons and physicians are awakening to the fact that another pitfall may be awaiting them in the rush to open the abdomen for every "thundering big pain in the belly."

Nearly all who have written on the subject in general state that

the condition seems to be more common in children than in adults. But still there are very many cases reported in the latter. And this general acknowledgment that the signs are more apt to be confused in children than in adults has led me to present the subject in that phase to you to-night.

There are several reasons why the subject is of especial interest and importance, particularly when the signs simulate those of appendicitis. Surgeons who have operated upon many cases of appendicitis in children state that conditions are much more serious in them because of the rapid extension of inflammation and septic processes both in the mucous and serous tissues in children, and hence an early operation is more necessary even than in adults.

Let me quote a few of the most prominent authorities and men who have had a wide experience in dealing with appendicitis in children:

McCosh, in the *Jour. American Medical Association*, 1904, says: "Appendicitis in children differs from that in adults by reason of the obscurity of the diagnostic symptoms and the more insidious progress of the disease."

Dowd, in *Medical News* for September, 1905, advocates early operation, especially in children, as they are much more liable to serious results when inflammatory action has taken place. He quotes many surgeons as having similar opinions.

H. W. Carson, in *British Medical Journal*, November 10, 1906, says, in reporting his last one hundred cases of operations for appendicitis, with reference to appendicitis in children, that abscess and general peritonitis are more apt to complicate appendicitis in children, and he thinks that in children it should be considered from a different standpoint than that in adults for the following reasons:

1. The onset may be insidious;
- 2, they cannot as a rule give an account of symptoms;
- 3, they resist examination and make signs and symptoms more complicated (and he strongly advises rectal examination in these cases);
- 4, owing to the thin sub-mucous coat abscesses form much more rapidly in children than in adults;
- 5, general peritonitis is much more common in children than in adults.

And he furthermore says that the most important thing to differentiate it from is pneumonia.

From these few quotations from men who have had some experience in operating upon children for appendicitis you may see

that it is even more necessary to make an early diagnosis in them than in adults, and all means to that end should be of as much interest to the surgeon as to the pediatrician.

My remarks upon etiology and pathology, while in a general sense can be taken to include the condition as found in adults as well as in children, still I shall indicate clearly wherein the signs and pathology in children differ from those in adults. Speaking generally, lesions of the thoracic viscera give rise to many and varied signs and symptoms extraneous to the chest. And this can usually be accounted for by the fact of so many and such important nerves with their numerous ganglia lying in such close proximity and their intercommunication by numerous anastomoses. Henry Head has given in *Brain*, 1896, a very excellent account clinically and experimentally of how lesions of the thoracic viscera can give rise to localized pain in the head, face, and different parts of the body located some distance from the seat of the disease and, at first glance, with no direct nervous connection with the diseased part. Some of his work is extremely interesting, as he shows from clinical cases alone, which as a rule were followed to the autopsy table to verify the exact pathological lesions existing, that when these lesions were present in certain portions of, for instance, the pleura, there were often present during the course of the disease pains in certain parts of the face and the head and limbs and abdomen, which pains as a rule corresponded with certain areas of the pleura involved. These symptoms spoken of by Head of course refer to adults as well as children, but as these symptoms and signs are nearly all what may be called of reflex origin, and as we know that in children much more often than in adults do we see evidences of reflex pain, so we can account in part at least for the greater prevalence of the signs in children.

The two diseases in children which I shall more particularly speak of, and which give these referred signs, are pneumonia and pleurisy. Carson, in speaking of differential diagnosis between pneumonia in children and appendicitis, gives the following points:

1. In pneumonia there is acute onset, high temperature, rapid respiration out of proportion to the pulse.
2. Dilatation of alæ nasi is present in pneumonia.
3. The abdominal muscles when rigid in pneumonia relax between respirations.

4. Right sided pneumonia may give acute hyperesthesia over the appendix, which disappears on firm pressure with the flat hand.

5. Doubtful abdominal symptoms occurring in association with unmistakable thoracic symptoms are probably reflex.

The chief order of the occurrence of the signs may be given in general as follows :

A sudden sharp pain in the abdomen, either in the epigastrium or in the right or left lower quadrant of the abdomen; vomiting, rigidity of the muscles, which rigidity is not always permanent; extreme hyperesthesia or tenderness of the abdominal wall, which can be made to disappear or at least much reduced in its acuteness by pressure with the flat part of the hand. Often the most intense seat of pain is to be found over McBurney's point. The knees may be drawn up on the abdomen; there is a high temperature and the patient gives every evidence of an acute abdominal condition. Often with the most thorough examination of the chest the signs of any involvement in the lungs or pleura cannot be made out. Indeed, in a number of the cases reported the thoracic signs did not appear until the crisis of the pneumonia had occurred. A peculiarity of the severe abdominal symptoms noted in a number of the cases is that they disappeared *para passu* with the appearance of the thoracic signs. One reason for the masking of the signs in the thorax can probably be explained by the reason that often the abdominal signs are due to an inflammation of the diaphragmatic or mediastinal pleura, which signs are extremely difficult to diagnose at all. To the differential points in the diagnosis already given by Carson may be added the examination of the urine for the absence of chlorides; the examination of the blood for the evidence of a leucocytosis; the expiratory "grunt" that is often given by children with pneumonia; the flush upon the cheek which is sometimes seen in pneumonia; the greater degree of tenderness along the attachment of the diaphragm to the costal cartilages.

To give a little better idea of the difficulties involved in differential diagnosis, I will cite one of the cases mentioned by Richardson: A girl five years old was taken with sudden pain in the abdomen while eating dinner. On the second day a physician saw her; had pain and tenderness in the right iliac fossa; temperature, 104.4; headache; and third and fourth day temperature and pain kept up, but the tenderness disappeared.

On the fifth day she began to have pain again and temperature rose. A consultant was called in, but nothing could be discovered. Then later Richardson was called to see the child for appendicitis; tenderness existed on the right side along the lower intercostal nerve, no dullness, no tumor; tender only on right side. Right thorax flat and tubular respiration and bronchophony. He advised against operation.

The importance of a differential diagnosis in these cases is evident, when we take into consideration the fact that if the abdominal condition is of an infectious or other character it will necessitate an operation; whereas if the lung condition is the one that is causing the trouble an exactly opposite treatment is necessary, and an operation would endanger the life of the patient. And that this is no mere picture of fancy can be substantiated by the willing records of some who have operated upon these cases, and by the histories obtained from others than the operators in other cases. It is surprising that the literature does not contain a greater number of references to these cases of mistaken diagnosis with operation. In looking over the records of men who report series of five hundred, one thousand, and two thousand cases of appendicitis, operated upon with varying degrees of success, hardly one records mistaken diagnoses of this character, with operations performed by reason of a diagnosis of conditions which did not exist. Nor is this said in any spirit of harsh criticism of the surgeons; but often more can be learned from the mistakes of men than from a long series of similar cases operated upon.

The conscientious surgeon's view of the difficulties and responsibilities in cases of this kind are most admirably expressed by Dr. Richardson in commenting upon a series of cases reported by him. In speaking of one case which he saw in consultation and in which the pneumonic signs did not appear until the fifth day and the abdominal symptoms simulating appendicitis were very marked, he says: "I have, however, known the abdomen to be opened many times on less evidence of appendicitis than there was in this case and the appendix found gangrenous and perforated. On the other hand, I have never seen a case presenting obscure abdominal symptoms of appendicitis, with plain symptoms of acute thoracic disease, in which the latter have not been the chief and only cause for the former." But he then goes on to say further that the cases where the atypical symptoms occur as

against those of real appendicitis are one to a hundred, and that: "If in case of doubt the rule is to operate, more lives will be saved than if the rule is not to operate." He says the diagnosis between thoracic and abdominal disease is easy as soon as the characteristic signs are present, and further that "the chief difficulty in making a distinction is to recognize that the necessity for that distinction exists, for the thoracic symptoms are always masked by the more conspicuous and distressing abdominal ones."

As Richardson says, and the majority of men agree with him, that if the acute abdominal symptoms exist with the presence of the signs in the thorax, the chances for the symptom complex being caused by the thoracic disease alone are very greatly in preponderance. Nevertheless it is possible for the two conditions to exist together, for Erdmann, in *N. Y. Med. Journal*, March 19, 1904, reports a case in which there was present evidence of pneumonia, with a distended and rigid abdomen, in which operation was suggested; but the case soon died before operation could be done and the autopsy showed a general peritonitis. Not only can this thoracic disease often be confounded with appendicitis, but Rose, in the *Lancet* of November 7, 1903, reports a case in which a child five years old was taken to a dispensary for a swelling in the feet, face, legs, was examined and given medicine and told to return in two weeks. Four days later the child seemed to be choking and a doctor was called in and found pain over the lower half of the abdomen, tender on pressure, frequent effort at stool, but only passed stained mucus; a lump was felt in right iliac fossa, temperature at 98°, pulse rapid, respiration 50, face pale. Râles all over front of left chest and resonance in both posteriorly. Diagnosis of early intussusception was made and patient removed to the hospital. During night straining ceased and next morning child was worse; temperature 98°, pulse 180, respiration 80. Tubular breathing at left base and no intussusception felt at the hospital. Died same evening. Post mortem showed both lungs entirely solid and shrunken in appearance, and in many places, especially over the left apex, there was a layer of purulent lymph. In the abdomen no intussusception was found, but on removing and laying open the intestines the region of the ileocecal valve was seen to be affected for about one to one and a half inches; on both sides of the valve there were recent crimson extravasations of blood in the submucous tissues presenting flame-like patches half an inch in diameter. The lower inch of the ilium was

edematous and the crowded solitary glands were swollen and presented a sago-like appearance, with a crimson background of extravasated blood. There were similar extravasations in the adjoining mesentery. The remainder of the intestine and other organs were normal. The intestinal appearances were only compatible with the theory of a small intussusception which had slid back.

Thus we see from these two cases and some other references in the literature that the two conditions (thoracic and abdominal lesions) may be coexistent. It is another element which enters into and complicates the successful diagnosis of this condition.

The pathology of this condition is probably best explained on the ground that the reflex is carried through the lower six dorsal nerves, which extend from the thorax on to the abdominal wall and supply the muscles of the abdominal wall all the way down to the brim of the pelvis. The diaphragm and the lower part of the pleura are also supplied by these intercostal nerves.

Barnard seems to think that at least in some cases the severe abdominal symptoms may be due to an actual neuritis from an inflammation of the nerve trunks. Rohrer, in *Maryland Med. Journal*, September, 1902, on the other hand, says that a great many cases of pneumonia have a direct inflammation of the diaphragm, caused by, first, direct extension; second, through the lymphatics, and third through the blood stream. And he says that most of the abdominal pain, especially in children, and pleuritic stitch are due to this inflammation of the diaphragm, and that it sometimes extends through the diaphragm, causing peritonitis. While it may be true that the upper surface of the diaphragm may be and, in fact often is, involved in pleuritic inflammation, yet if in these cases the pathological conditions are severe enough to involve the muscle tissue of the diaphragm and thus by continuity and contiguity of structures cause the acute abdominal symptoms the rapid recovery would not surely take place, as most often does occur. A muscle like the diaphragm involved to that extent would certainly not regain its tonus in the time it takes an acute pneumonia to recover.

The distribution of the intercostal nerves to the skin and muscles of the abdomen can account for the localization of many of the pains in these cases. If the seventh, eighth and ninth nerves are affected, the chief epigastric tenderness and spasm will simulate a gastric ulcer perforation or a gall-bladder or liver trouble.

This occurred in one of the cases reported by Barnard, which is as follows:

A girl had been treated for some months for gastric ulcer and anemia. She had a sudden violent epigastric pain and vomiting while walking on the streets; brought to the hospital in collapse; pulse 120, temperature 104.5° ; abdomen rigid, tender, distended, and these signs most marked in the upper gastric region. Admitted to the surgical ward as a case of ruptured gastric ulcer, and the surgeon opened the abdomen in two hours time; found absolutely nothing; no peritonitis present; no perforations. On the second day of admission a right basal pneumonia was found and temperature fell to 101° ; on the third day it rose to 104° and signs of consolidation appeared at the left base; died on the fifth day. Post mortem showed double basal pneumonia and right diaphragmatic pleurisy. In stomach a shallow ulcer size of a sixpence was found, but it was not even near perforating through the gastric wall. No signs of peritonitis.

There have been other cases reported in adults in which gastric and gall-bladder lesions were diagnosed, but it was evident that the seventh, eighth, and ninth intercostal nerves were the ones that were giving the symptoms. One or two of these cases were reported by Dr. Hardin of this city before the Clinico-Pathological Society last year. Some of the earliest cases which are in the records have been those of hepatitis diagnosed with evident pleurisy existing. The tenth and eleventh nerves on the right side supply the region of the appendix. A curious feature of this nerve supply with the reflex element so prominent in it is that the thoracic disease may exist on one side and the abdominal symptoms appear on the opposite side. Also the further interesting fact that sometimes we find the upper lobe of the lung involved; but most often it is one of the lower lobes and the diaphragmatic pleura which gives the symptoms of acute abdominal disease.

A most interesting case has been reported by Dr. Hardin in the paper referred to above of a boy eight years old taken ill with chilliness, fever, abdominal pain, and vomiting; marked abdominal rigidity and tenderness on examination. These symptoms continued until the fifth day, when the parents became anxious and desired a consulting physician. At this time the abdominal pains and localized tenderness were very acute. Temperature continued about 102° and pulse rapid. The child's respira-

tions were unduly rapid, but there was no cough. The consulting physician diagnosed appendicitis, but Dr. Hardin objected on the score of too rapid respiration and said he suspected pulmonary involvement. Two days later, on the seventh day of the disease, the consultant insisted on operation for appendicitis, while Dr. Hardin felt more convinced of lung involvement on account of the continued high fever, the very rapid respiration, and what he considered a weakened respiratory murmur over the left lung behind. The consultant did not agree that there was a weak respiratory murmur and claimed that involvement of the left lung could not produce reflex signs in the right abdomen. There was still no cough and he confessed that he felt puzzled, though not ready to give in. On the following morning, the eighth day of the disease, unquestionable signs of the consolidation of the left lung were present and the case now pursued a typical course of lobar pneumonia, the crisis occurring three days later and recovery following.

Several men have reported cases in which the signs simulated appendicitis with all the focal signs at McBurney's point which developed pneumonia of the opposite lung—that is, the left lung. Herrick reports one case in which the left *upper* lobe was involved and gave marked signs of cramp in the belly—not necessarily localized over McBurney's point. Garreau reports a case of Charles Lereux in which there was pneumonia of the apex with epigastric pain.

When the signs in the abdomen are localized in the epigastric region a diagnosis of acute gastric indigestion is sometimes made as was done by Morse who made a provisional diagnosis of such in a case of a girl three years old who was taken with a sudden attack of pain in the belly, fever, vomiting, etc. Careful examination of chest showed no signs. On the fourth day the clinical signs of pneumonia began to develop and the abdominal symptoms to become quiescent, and examination of the lungs showed solidification of left lower lobe.

I have collected the following cases occurring in children from the literature and personal information. And they are by no means all that may be found if a more careful search were made. No adult cases have been included in this list (several of which I have personally seen), but there are about twice as many reported in recent literature:

Reporter	No. of Cases	Cases Operated upon for Abdominal Disease	Remarks
Barnard, H. L.....	3	1	Died.
McCosh.....	1	—	
Morse.....	3	—	
Morse (Heard of).....	2	2	May be included in other reports.
Rose.....	1	—	
Cozzolino.....	1	—	
Massolongo.....	4	—	
Erdmann.....	1	—	
Dowd.....	2	—	
Richardson.....	5	1	Recovered.
Herrick.....	2	—	
Holt.....	1	—	
Garreau.....	9	3	Recovered, 2; died, 1.
Fenwick.....	1	—	
Hardin.....	1	—	
Griffith.....	8	—	
Comby and Zielinski.....	1	—	
Thomas (Heard of).....	3	1	Recovered.
Total.....	49	8	

One case was pointed out to me by an interne in Gouverneur Hospital, New York City, some years ago as a case that came in and was seen by the surgical interne who was going to send immediately for the surgeon for operation for appendicitis. The child had a pneumonia.

For the other cases reported by me I am indebted to Dr. Henry P. Parker. He saw them in Baltimore in Union Protestant Hospital under Dr. Finney's service. One was a child whose father, a physician, diagnosed the condition as appendicitis and brought him in for operation. Pneumonia developed with pleurisy of right base. The other, a most interesting one, of acute abdominal symptoms developing with a clear history of an injury to the abdomen from a blow, and the surgeons and physicians being on their guard for pulmonary lesions—yet in their absence, or at least their doubtful presence—laparotomy was done after waiting a reasonable length of time, and absolutely nothing abnormal was found. Pneumonia, left lower lobe, was found the day after operation. Empyema with resection and recovery.

Dr. Musser, as editor of the American edition of Nothnagle's Encyclopedia of Medicine, mentions, under the article on pneumonia, that he has seen two cases which were about to be operated upon for appendicitis turn out to be pneumonia. He does not say whether they were children or adults. And in several places in the article he calls attention to the abdominal symptoms in some of these cases of pneumonia, especially in children, the writer of the article failing to note this important fact.

SURGICAL CONDITIONS OF THE KIDNEYS.*

WITH REPORT OF PERSONAL CASES.

BY

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(With two plates and illustrations.)

THE object of this report is to present a series of specimens illustrating various classified surgical conditions of the kidney, which specimens have been collected from cases personally operated upon.

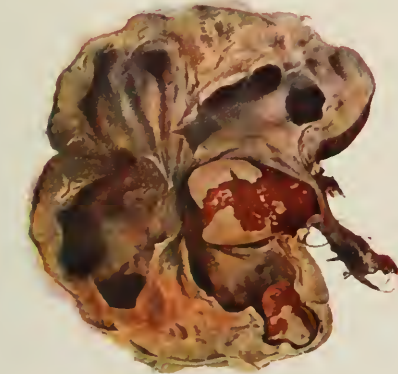
A review of their clinical histories will serve to impress what is already known: That there is a wide departure from stereotyped lines in the symptomatology of many kidney cases, and that accurate diagnosis is possible only by careful preliminary study in each instance.

Chart I. gives a general classification of the surgical maladies of the kidney including (1) acute infection of the kidney, or what is known as acute surgical kidney, represented in multiple foci or minute abscesses throughout the organ; (2) the more advanced condition of surgical kidney, pyelonephritis, being an inflammation involving the pelvis and parenchyma, and (3) the final condition of surgical kidney, pyonephrosis—nephritic abscess involving, more or less, the entire organ, often transforming it into a sac of pus.

When the same pathological conditions occur with the tuberculous element implanted thereon, corresponding to the multiple foci, we have miliary tubercles; instead of the ordinary pyelonephritis, tuberculous pyelonephritis, etc.

The same inflammatory conditions and a foreign body as the causative factor, or the presence of calculus or calculi—we define as the pyonephritic and pyonephrotic stone kidney; and, in distinction from this composite condition is calculus in the kidney with none of the conditions attendant upon inflammation—renal lithiasis without infection. Also hydrops of the kidney, or hydro-nephrosis, caused by obstruction to the ureteral channel, and, finally, the neoplasms of the various types.

*Read before the American Gynecological Society at Washington May 8, 1907.



No. 1. Pyonephritic Stone Kidney.



No. 2. Pyonephritic Stone Kidney.



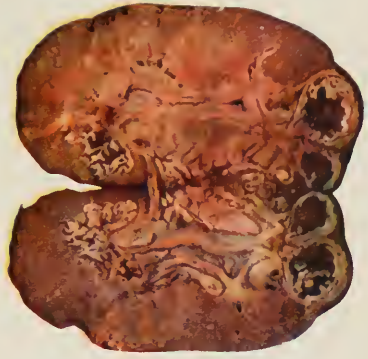
No. 3. Outer Surface of No. 2.



No. 4. Tuberculous Pyelonephritis.



No. 5. Outer Surface of No. 4.



No. 6. Tuberculous Kidney.

I. Aseptic

1. Neoplasms
2. Calculi
3. Nephroptosis { (a) Hydronephrosis
4. Ureteral obstructions { (b) Passive congestion
5. Trauma { Rupture with severe hemorrhage
Secondary inflammation

II. *Septic*

1. Acute infection of kidney
(multiple abscess foci)
 - (a) Ascending
 - (b) Tuberculous
 - (c) Other hematogenous infections
2. Pyelitis and pyelonephritis
 - (a) Ascending
 - (b) Calculous
 - (c) Obstructive
 - (d) Tuberculous
3. Pyonephrosis
 - (a) Ascending
 - (b) Calculous
 - (c) Obstructive
 - (d) Tuberculous.

Chart II. is a synopsis of cases reported, and contains a suggestive method of investigating cases and of keeping useful records.

The study of the symptomatology of different cases brings out the variation in symptoms and the importance of applying the different diagnostic methods for investigation, namely, cystoscopy, radiography, and careful laboratory technic, by means of which we are enabled to make a rational interpretation of the existing symptoms and a precise localization of the suspected lesion, either by positive evidences or by a process of elimination, before resorting to operative measures.

CHART II.—SYNOPSIS OF CASES.

<i>Condition.</i>	<i>Symptomatology.</i>	<i>Diagnosis.</i>	<i>Operation.</i>
I. Renal lithiasis	Pain	Palpation	Nephrotomy or
Stone kidney	Hematuria	Cystoscopy	nephrectomy
without infec- tion	Urination	X-ray	
		Laboratory	

2. Renal lithiasis with infection	Pain	Palpation	Nephrotomy or nephrectomy
	Hematuria	Cystoscopy	
	Pyonephritic	X-ray	
	Stone kidney	Laboratory	
3. Pyonephrotic Stone kidney	Pain	Palpation	Nephrotomy or nephrectomy
	Hematuria	Cystoscopy	
	Pyuria	X-ray	
	Urination	Laboratory	
4. Tuberculosis of the kidney	Pain	Palpation	Nephrotomy or nephrectomy
	Hematuria	Cystoscopy	
	Pyuria	X-ray	
	Urination	Laboratory	
5. Trauma of the kidney	Pain	Palpation	Nephrotomy or nephrectomy
	Hematuria	Exterior signs	
	Collapse	of injury	
5. Miscellaneous types simulating previous conditions	Pain	Palpation	Exploratory
	Hematuria	Cystoscopy	Nephrotomy
	Pyuria	X-ray	
	Urination	Laboratory	

CASE I.—*Multiple Renal Calculi*.—January 29, 1906; ———, age 18.

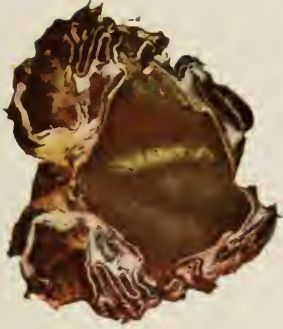
Symptoms.—(a) *Pain*. Complains of pain in the right lumbar region, which does not radiate toward the testis nor in any other direction. This pain is worse in the morning on waking; increases somewhat with exercise and after drinking alcoholic stimulants. The patient states he is free from pain in the afternoon and that it sometimes returns when he is reclining in bed, but is never sufficient at this time to waken him. Hence the pain does not bear a direct relation to the muscular activity or rest of the body. The duration of the pain is 13 years.

(b) *Hematuria*. The patient remembers having passed blood in the urine when he was very young, and again when he was about 9 years old. He states that he has passed it about five times since then, and on each occasion about one-half cupful mixed with urine. Between times the urine has been perfectly clear.

(c) *Urination*. He urinates about every two hours by day, but does not rise at night; no increased frequency with exercise; no pain on urination.

Previous History. Denies venereal disease and has never had night-sweats or protracted cough.

Family History. Father died from pulmonary hemorrhage,



No. 9. Photograph of Kidney.



No. 12. Left Chronic Pyelonephritis.
Kumakura.



No. 2. Tubercular Rx. of Kidney.



No. 1. Right Pyelonephritis. Kumakura.
Acute and Chronic.



No. 3. Tubercular Pyelitis of Kidney.



No. 10. Kidney containing Nephroma
(cystic).

alleged to have been brought on by drinking. Mother alive and healthy. Paternal grandfather had "asthma" and died from lung trouble. Two brothers died in early infancy, one having a severe cough. There are seven healthy children, including himself, living.

Physical Examination.—Palpation negative; cystoscopy negative; *x*-ray negative.

Urinary Examination.—Urine is practically clear; shows slight trace of albumin; acid; no epithelium; no pus; occasional blood-cell; crystals of oxalate of lime.

Operation.—February 2, 1906. Lumbar nephrolithotomy. Ten irregularly-shaped stones are removed from the right kidney. Some are round, with flat bases, and others are jack-straw shape; weight, 70.77 grams; composition, uric acid and oxalate of lime. Patient makes an uneventful recovery and leaves the hospital at the end of ten days.

Remarks.—The important features of this case are found in the preliminary history, which suggested either tuberculous or calculous kidney, and the negative *x*-ray diagnosis.

CASE II.—*Pyonephritic Stone Kidney.* ———, age 45.

Symptoms.—(a) *Pain* entirely associated with urination, which was frequent and difficult.

(b) No *hematuria*; marked pyuria.

(c) *Urination* every hour by day; two or three times by night. Fifteen years back, specific urethritis.

Physical Examination.—Filiform stricture of the bulbomembranous junction. Urine freely purulent forming bulky deposits; foul odor; some hyaline casts and normal urea output. No renal pain; palpation negative, patient being very fleshy.

Operation.—Perineal urethrotomy. No reduction of pus in the urine followed operation.

Cystoscopy through perineal opening. Chronic cystitis; both ureteral orifices swollen. The urinary jet from right side distinctly cloudy. Field of vision quickly obscured. Left side showed nothing. No *x*-ray. Calculi not suspected.

Second Operation.—Right kidney explored by lumbar incision. Kidney found enlarged and adherent, and presence of calculi recognized. The cortex was split and the stones removed, one by one, until twelve had been extracted, and two were found in the perirenal tissue, which had evidently migrated through the cortical surface. Patient made a good recovery. (See Figs. A and B.)

Remarks.—Symptoms all vesical and urethral; no vesical pain or hematuria; palpation impossible. Diagnosis made by cystoscopy; *x*-ray not employed. Nephrotomy instead of nephrectomy as, although the kidney was much damaged, there was no general



Fig. A.—Calculi from pelvis and calices of kidney.

septicemia, and the competency of the opposite kidney had not been satisfactorily established.

CASE III.—*Pyonephrotic Stone Kidney*. (Fig. 1.) ———, age 40.



Fig. B.—Calculi from cellular tissue, outside of pelvis and ureter.

Symptoms.—(a) *Pain* of dragging character in the right infra-costal region associated with movable body in the right abdomen. Pain varied with the appearance and disappearance of movable body. Ten years previously operation had been performed and a small calculus removed from the right kidney; since when the pain

has been as described, associated with the movable body.

(b) No *hematuria*.

(c) *Urination* slightly more frequent than normal. *Urine* freely purulent; contains bacteria and some albumin; urea output normal. Microscopically, cells from renal tubes seen.

Physical Examination.—Right kidney palpable and usually movable; not markedly tender. X-ray picture reveals the presence of two stones, one involving almost the entire pelvis.

Operation.—Kidney exposed and found to be little more than a pus sac containing stones. Nephrectomy.

Remarks.—Symptoms distinctly renal; pain and pyuria. X-ray diagnosis positive. Cystoscopy not performed to estimate the opposite kidney, but on account of the showing of the urinary examination, together with the existence of nothing more than a pus sac on one side, the presumption of the competency of the opposite kidney is fairly established. Nephrectomy is performed both on account of the small remnant of kidney structure and in order to shorten convalescence, the patient being in bad general condition.

CASE IV.—*Pyonephrotic Stone Kidney*. (Figs. 2 and 3.)
—, age 13; February 1, 1907.

Family History.—Mother had never been considered strong; subject to colds of a protracted character.

Symptoms.—(a) *Pain*.—Present condition began one year ago with an attack of pain of a severe, boring character, located in the upper left quadrant of abdomen. At that time he passed large quantities of foul-smelling urine which was very cloudy and contained a thick, tenacious material. This attack cleared up under treatment.

Present attack began last August and resembled the previous one. It seemed to follow an ordinary cold. The principal evidence was seen in the cloudy, thickened condition of the urine.

In December last *pain* reappeared in the left side and abdomen.

(b) No *hematuria*.

(c) *Urine* freely purulent; great frequency of urination.

Physical Examination.—*Palpation*; large and readily palpable left kidney. No cystoscopy; x-ray shows suspicious shadow, which is indefinite.

Examination of Urine.—Large quantity of pus; bacteria; some albumin. No tubercle bacilli.

Exploratory operation determined upon.

Operation.—February 9, 1907. The kidney is readily exposed by a lumbar incision and is found to be enormously enlarged; it feels little more than a pus sac or cystic tumor. The ureter is greatly thickened. The kidney and as much of the ureter as possible removed. Recovery uninterrupted. The urine clears up until it becomes perfectly transparent and normal.

Examination of Specimen.—Section of the kidney showed simple ulceration and abscess formation. Almost the entire kidney substance outside of the abscess is replaced by inflammatory fibrous tissue through which are areas of round-cell infiltration and exuded leukocytes. A few glomeruli are present, but the tubules of the cortex are completely atrophied. There are no evidences of tuberculosis.

Remarks.—Pain directed to kidney. Marked vesical symptoms. Uncertain x-ray result. Question between tuberculosis and stone. Gross appearance of specimen strongly tuberculous, which the pathological examination, however, disproved. (See Fig. 3.)

CASE V.—*Tuberculous Kidney.* (Figs. 4 and 5.) ———, age twenty-eight.

Symptoms.—(a) *Pain.*—Severe in character in right kidney, and reflected downward toward the thigh. Irregular in duration.

(b) *No hematuria.*

(c) *Urine purulent.*

Urination markedly frequent during attacks of pain; less frequent between times. Vesical pain during urination. Condition grew progressively worse while patient was under observation and urination became so frequent that incontinence occurred.

Family History.—One aunt who died of tuberculosis.

Physical Examination.—*Palpation:* right kidney not palpable, left kidney negative. Right ureter thickened and enlarged.

Cystoscopy.—Bladder capacity 4 ounces. Urinary jet from right side purulent. An ulcerated area is seen surrounding the right ureteral orifice and another in the upper quadrant of the bladder.

Urinary Examination.—No tubercle bacilli found.

Operation rejected at first, but conditions grew gradually worse, complicated by febrile attack.

Operation.—Kidney exposed through a longitudinal lumbar incision. An abscess was found in the anterior surface of the kidney and several cheesy areas near the cortex. Ureter much thickened. The kidney was obviously tuberculous.

The patient was turned to the opposite side and a small, longitudinal incision made along the opposite kidney, which was palpated with the finger and found to be, as near as could be judged, normal in contour and size.

The affected kidney was then removed with a portion of the ureter. Patient left the hospital in five weeks.

Report of urine from remaining kidney after operation.

Quantity in twenty-four hours, 1,440 c.c.; urea, 28.16 grammes; albumin, a trace; some pus in the urine; very few cells; no tubercle bacilli.

Examination of specimen shows an abscess in the anterior surface. Pelvis markedly dilated. Microscopically, shows groups of tubercles with cheesy centers extending into the cortex.

Diagnosis of tuberculous nephritis and suppuration involving the ureters and pelvis of the kidney (pyelonephritis) was made.

Two years following operation patient was seen and found to be much improved in general health, having gained in weight twenty pounds.

Remarks.—Predominant vesical symptoms. The presence of tubercles in the urine not established before operation, but general appearance of kidney justified diagnosis of tubercle. The presence of the other kidney being established, the extensive involvement of the right kidney, with pyogenic infection, called for its radical removal. (See Fig. 5.)

CASE VI.—*Tuberculous Kidney.* (Fig. 6.) ———, age twenty-six; January 13, 1906.

Family History.—Negative.

Symptoms.—(a) *Pain.*—Present complaint commenced last April with sudden, sharp and severe pain in the upper quadrant of right abdomen and right lumbar region extending downward to the symphysis pubis. This pain lasted for variable intervals and has come on every few days. There has also been pain of a burning character during and after urination; the urination has been increased in frequency and the quantity of urine has been greater during the paroxysms.

Abstract of Symptoms.—Sharp paroxysm of pain in lumbar and abdominal regions; burning and frequent urination.

(b) *No hematuria.* Pyuria.

Physical Examination.—Right kidney is palpably enlarged and tender; right ureter thickened. Left kidney cannot be felt by palpation.

Cystoscopy.—Bladder wall thickened, but no areas of ulceration. Left ureter is seen acting freely.

An unsuccessful attempt is made to catheterize the ureters. The right ureteral mouth is so contracted that a catheter cannot be introduced.

Examination of Urine Before Operation.—Urine pale amber, cloudy, no odor, acid; albumin, marked trace; specific gravity, 1.015; many pus cells; cubical epithelial cells; tubercle bacilli found.

As the indications pointed toward an active surgical lesion in the right kidney and as cystoscopy had demonstrated an active functioning kidney on the left side, ureteral catheterism having been unsuccessful, exploratory operation determined upon May 7, 1906.

The right kidney is exposed through an incision in the right lumbar region and the kidney is found to be markedly enlarged and extensively diseased. There were many cheesy areas and large foci of necrotic tissue. In the lower pole there is evidence of advanced disease. (See Fig. 6.) Kidney removed. Wound heals slowly; but patient sustains operation fairly well. Patient discharged from hospital May 19, 1906, improved in general condition.

Remarks.—It is evident that the remaining kidney is also diseased, but, on account of the removal of the most active focus in the left kidney, it is hoped that the ultimate result will show itself in improvement in the remaining kidney.

CASE VII.—*Rupture of the Kidney.* (Fig. 7.) ———, age forty-five.

Patient was struck by wheel of large baggage truck in the right side, between pelvis and ribs. Contusion of right side. A large, rounded mass palpable in kidney region. Severe pain and tenderness.

Symptoms.—*Urine* contains bright red blood. Five days after injury urine continues to show abundance of blood and some leukocytes, and enlargement over kidney is much more marked; general condition has gradually failed.

Operation.—Incision over right lumbar region. An enlargement is exposed the size of a child's head which, when opened, is found to contain the kidney and free blood clots. Complete rupture of the kidney is found; the hemorrhage continues with profuse flow, on which account it is necessary to clamp the vessels, and kidney is removed.

Patient makes a rapid and uninterrupted recovery.

Examination of urine after operation shows that the remaining kidney secretes satisfactorily.

Examination of specimen shows complete rupture of the kidney almost into halves, and a number of areas of suppuration. (See Fig. 7.)

CASE VIII.—*Rupture of Kidney.* (Fig. 8.) ———, age twenty-five.

Accident; patient was struck by a falling wall on the right side.

Symptoms.—Contusions of right side. Great tenderness over right kidney, front and back. Greater rigidity of right abdomen. A large mass is palpable in the right kidney region.

Bright red blood in the urine.

Urine, three days after admission, shows blood, numerous hyalin, epithelial, and granular casts. Leukocyte count, 15,000.

Operation.—Exploratory nephrotomy. Large quantity of blood clot is found surrounding the kidney. Organ is ruptured through the pelvis. There are a number of areas showing secondary changes suggestive of beginning suppuration. Kidney removed.

Patient left the hospital four weeks after operation.

Examination of specimen shows zigzag tear running into the pelvis almost reaching the outer border. In the cortex are secondary changes, necrotic in nature. (See Fig. 8.)

Microscopical examination by Dr. Sondern yields the following report: Albuminous degeneration of the lining of Bowman's capsules. Proliferation and degeneration of epithelium in the cortical tubules. Diffuse infiltration between the capsules; large areas have lost their staining power and have been converted into necrotic masses. Connective tissue between tubules edematous and diffusely infiltrated with pus cells.

Diagnosis: Acute diffuse suppurative nephritis.

Remarks.—Nephrectomy was done in Case VII. on account of extensive laceration and continued hemorrhage, and in Case VIII. on account of evidence of beginning suppuration and general physical deterioration.

CASE IX.—*Trauma of Kidney; Secondary Nephrectomy.*—Boy, aged thirteen. Patient sustained injury from falling downstairs. Was thought to have general peritonitis, and a laparotomy was performed three days after injury. Four weeks later a large swelling appeared in the lumbo-abdominal region, which was punctured and emptied. Somewhat later, the swelling having

returned, a lumbar incision was made to drain what was a hydro-nephritic sac. This all occurred previous to the time the patient was seen by the writer, which was about three months after the injury, when the wounds had healed with the exception of a large urinary fistula over the site of the right kidney. In spite of the large amount of drainage of urine through this fistula there was a normal amount of secretion from the bladder.



Fig. C.

Operation.—Kidney exposed through lumbar incision with difficulty on account of adhesions. The ureter is completely occluded in a mass of scar tissue at the site of the rupture which had extended into the pelvis. Kidney is removed and the boy makes a good recovery. (See Fig. C.)

Remarks.—The competency of the remaining kidney was established at the time of operation by the quantity of normal urine obtained from the bladder and the fact that the ureter on the injured side was completely occluded.

CASE X.—Pyonephrotic Kidney. (Fig. 9.) Haughton, p. 20; April 19, 1907.

Family History.—Mother died of tuberculosis; no further history of tb.

Symptoms.—*Pain*; severe, sharp, dragging pain in right lumbar region; not reflected; almost continuous in character; worse in the upright position; duration, about 2 months.

Hematuria.—No history of such.

Pyuria.—Urine freely purulent; heavily laden with free pus and purulent clumps.

Urination.—No frequency of urination past or present; no pain connected with urination excepting that associated with the passage of large plugs of purulent material.

Previous History.—No venereal disease; no injury. About eighteen months ago was attacked with a sudden illness consisting of chills and fever and general malaise. At that time this malady was called "kidney trouble;" another similar attack six months subsequently.

Diagnosis.—*Palpation.* A large and readily palpable, freely movable mass in the right lumbo-abdominal region, sensitive to pressure. Left kidney region negative.

Cystoscopy.—The bladder is cleansed with great difficulty; after 15 or 20 minutes' washing the return is still hazy. Observation cystoscope introduced; right ureteral mouth dilated; a heavily clouded urinary jet is recognized. Satisfactory observation of the opposite side is not accomplished.

X-Ray.—Negative.

Urine is turbid; contains heavy sediment; about one-third volume of pus; specific gravity, 1.017; acid; large percentage of albumin. In a microscopic examination nothing is noted beyond the presence of pus. Frequent examination for tubercle negative.

Blood Examination.—Leukocytes, 12,000; polynuclears, 62 per cent.

Operation.—Lumbar nephrectomy, April 25. Three days after operation urine still purulent, but bulk of pus markedly diminished.

Examination of specimen reveals no tubercle.

Remarks.—Causative factor not demonstrated; the potency of opposite kidney not established prior to operation; but the condition of the affected kidney—which was nothing more than a pus sac (Fig. 9)—justified its removal and reliance upon the other organ.

CASE XI.—*Parenchymatous Nephritis; Suspected Tuberculous Kidney.* (Fig. 10.) L. M., age nineteen.

Family History.—Father, mother, and one sister died of tuberculosis. One living sister reported to have pulmonary tuberculosis and patient herself had history of hemoptysis.

Symptoms.—(a) *Pain.*—Sharp pain in left side much aggravated by walking and movements of body; duration, eight years.

(b) No hematuria.

(c) *Urine* practically normal in appearance and contains only a small percentage of albumin and here and there a hyalin cast.

Physical Examination.—Both kidneys are palpable. Left kidney is acutely tender to pressure.

Report of Dr. Barringer:

Cystoscopic Examination.—Bladder capacity, 175 c.c. Bladder washed clear on first washing excepting for a few flakes. Entire bladder mucous membrane normal. Right ureteral orifice normal, contracting regularly. Left ureteral orifice normal, contracting regularly.

Separation.—Separator remained in place 20 m. In that time 6 c.c. of clear urine flowed from the right tube and $\frac{1}{2}$ c.c. of clear urine flowed from the left.

Analysis:

<i>Right Urine.</i>	<i>Left Urine.</i>
Color, yellow.	Light yellow.
Appearance, clear.	Clear.
Urea, .007 gm. to 1 c.c.	(not <i>q.s.</i> Urea present).

Microscopical.

Red blood cells, none.	None.
White blood cells, rare leukocyte. No pus.	Rare leukocyte; no pus.
Epithelium. Rare—squamous.	Rare squamous.
Casts. Two hyalin.	None.

Remarks.—The right kidney seems to be doing practically normal work according to the quantity secreted, although the amount of urea secreted seems to be a little low.

The left kidney seems to be doing but very little work.

Catheterization of the Ureters, April 9, 1907.—Both ureters were easily catheterized; the right ureter excreting $2\frac{1}{2}$ c.c. in 10 m. (5 c.c. in 20 m.), and the left ureter excreting $\frac{1}{2}$ c.c. in 20 m.

Analysis:

<i>Right Urine.</i>	<i>Left Urine.</i>
Color, yellow.	Light yellow.
Appearance, clear.	Clear.
Urea, .008 gm. to 1 c.c.	Not <i>q. s.</i>

Microscopical.

Red blood cells, rare.	None.
White blood cells, none.	None.
Epithelium, rare squamous.	Rare squamous.
Casts, none.	Rare hyalin.
Mucus, present.	None.

Remarks.—The separated and catheterized specimens entirely agree.

Operation.—Kidney exposed. Ureter catheterized from above downward. General appearance anemic with several areas of density throughout the organ. Kidney removed.

Post-operative examination of urine reveals that remaining kidney is functioning and compensating satisfactorily. The urine is to all intents and purposes normal; there being present only a few pus cells evidently from the operative field.

Pathological Examination of Specimen by Dr. Sondern.—The kidney is normal in shape and size. There is subcapsular congestion and slight hemorrhage. Section shows the cortex normal in thickness, but pale. The pelvis shows submucous hemorrhages. Microscopically, the connective tissue elements are found normal in amount. There is slight congestion in places. The parenchyma shows cloudy swelling and extensive sloughing. The tubules are filled with the debris of disintegrating cells. Some of the glomerular cavities also contain debris. Section through the calices of the pelvis shows the epithelium intact. Just beneath it there is an extensive hemorrhage extending with interruptions almost around the lumen. No tubercles found.

Diagnosis.—Parenchymatous nephritis. Hemorrhagic pyelitis.

Remarks.—The fact that nephrotomy was performed in this case without conclusive evidence of tuberculosis might call for criticism. Besides the overwhelming family history of tuberculosis, the existence of a pain of long duration located in and identified with the kidney, the very deficient functioning power of this kidney, and several areas of hardness found upon operation, and the history of hemoptysis led to the conclusion that, if these areas were not tuberculous, the chances of their undergoing such changes in the future were so great that the benefit of the doubt was given the patient by the removal of the kidney.

CASE XII.—*Double Pyelonephritis.* (Figs. 11 and 12.) W. G. H., age sixty-five. April 3, 1907.

Symptoms.—Active symptoms directed to bladder and prostate. Marked urgency, frequency and difficulty of urination; much pain; almost complete retention. Catheter goes with difficulty, and causes great distress. Three days after first examination severe pain in right kidney, spontaneous in occurrence; no hematuria; *urine freely purulent and foul.*

Diagnosis.—(a) *Palpation.*—Neither kidney is palpable.

(Patient put into hospital and perineal drainage performed.)

(b) *Cystoscopy.* (Perineal.)—The right urinary jet is freely

purulent and the ureter dilated and congested. Left ureter dilated and congested; urinary jet not noted.

(c) No *x*-ray.

Operation.—On account of progressive diminution and almost complete anuria—the urine secreted being almost solid with pus and reduced to six drachms in as many hours—operation upon the right kidney is determined upon.

The kidney is incised and found to be the seat of acute infection; the pelvis is full of foul, purulent urine.

Because of the uncertainty as to the capacity of the opposite kidney, the kidney is not removed, but sewn in wound. Patient died seven hours after operation.

Pathological Examination of Opposite Kidney (Fig. 12).—Section of the left kidney through the cortex, extending from the margin of one of the ulcerating areas into the fatty capsule, shows the following condition:

The tubules show almost complete atrophy, only a few scattering ones remaining, which have a flat or very low cuboidal epithelium. Many of them contain casts and a few necrotic debris. The walls of the blood-vessels are very much thickened. The glomeruli are completely atrophied and replaced by hyalin fibrous tissue. The main tissue present is a fibrous inflammatory tissue which is very cellular. There are young blood-vessels developed throughout, giving the appearance of granulation tissue. There are many phagocytes present holding light-yellow, granular pigment. The capsule is thickened and very adherent to the cortex and also to its fatty capsule by inflammatory fibrous tissue.

Remarks.—An examination of the history of this case seems to justify the operative procedure throughout. The patient came with complete retention of urine and sepsis, but no symptoms directed to the kidney; and, therefore, there was no choice of operation, the indication being for immediate perineal drainage. Perineal cystoscopy revealed the implication of the right kidney and the probable involvement of the opposite side. The progressive anuria called for immediate operation, and the abscess of the right kidney justified this course. This kidney was so acutely and diffusely infected that its removal, under ordinary circumstances, would have been desirable (Fig. 11); but the involvement of the opposite kidney made such a course improper; and therefore nephrotomy alone was performed. The post-mortem examination of the opposite (left) kidney demonstrated the wisdom of such a course, and,

furthermore, revealed that a double nephrotomy would not have changed the outcome, as the left kidney was little more than a fibrous mass encapsulated within a fatty sac (Fig. 12).

109 EAST THIRTY-FOURTH STREET.

TRAUMATIC DISPLACEMENTS OF THE NONGRAVID UTERUS.*

BY

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THAT violence may cause displacement of the uterus, even when nongravid, has long been recognized as a fact. An examination of the literature of the subject shows that cases have been recognized and reported as far back as the eighteenth century, and since that time the recorded cases are comparatively numerous. The accident is a rather rare one, and frequently when seen is not reported. This is partly because the position of the uterus before the accident is rarely positively known, and although the gynecologist may be morally certain that violence caused a certain displacement actual proof is difficult. This may be the reason that a minority of gynecologists deny the possibility of such a cause.

The common *varieties* of displacement caused by violence are retroversion, prolapse, and procidentia, the first mentioned being the commonest and the last the rarest. When retroversion is so caused the uterus is frequently incarcerated—jammed by the violence into the hollow of the sacrum, so that a certain amount of force is necessary to reduce it.

The *age* at which this accident may occur varies from girlhood to senility. Richeraud reports a case of complete procidentia in a virgin aged fourteen due to violent effort during menstruation, and cases are found where the patient was long past the menopause.

Etiology.—Causes are predisposing and actual. The accident may occur with or without a predisposing cause, although many writers claim that such a cause must exist before the accident may happen.

These *predisposing causes* are as follows: First, pressure from a distended bladder or a tumor thus pushing the uterus backward and giving intraabdominal pressure a chance to act on the anterior

*Read before the Brooklyn Gynecological Society, May 3, 1907.

surface; second, relaxation or injury of the uterine supports, either the ligaments or pelvic floor from whatever cause, or atony of the general abdominal and pelvic musculature; third, a top-heavy uterus, whether from simple congestion, menstruation, subinvolution, or tumor; fourth, diseased, and consequently heavy appendages, which would tend to pull the uterus down, or adhesions or inflammatory products which might cause slight backward or downward displacement.

The *actual* causes (excluding crushing injuries with which the paper does not deal) are but two—sudden violent muscular effort, or a fall in which the patient strikes on the back, buttocks, or feet. The muscular effort is that of the abdominal muscles with a fixed diaphragm, which acts by causing a tremendous increase of the intraabdominal pressure, thus naturally forcing the uterus downward. Reported cases show that, among others, such acts as lifting, pushing, pulling, or slipping were competent causes. These cases are strikingly analogous to those of hernia with the same etiology. Falls of different kinds and varying degrees of violence make up the commonest direct cause. Intraabdominal pressure also plays a part in many of these cases.

The *symptoms* are, that following violence, there is frequently a distinct and reliable history of the patient having felt something give way. This cannot be obtained in all cases, nor does it follow that whenever a woman complains of such a sensation a displacement has taken place. Pain is the most prominent and constant symptom. It is usually severe, especially on movement of the body, and is most complained of as severe backache. It is not infrequently so intense that the person faints. A feeling of pressure or bearing down is also a fairly constant symptom. Hemorrhage occasionally takes place, most commonly in the rare cases of procidentia. Nausea and the peculiar indescribable sick feeling that accompanies so many gynecological disorders is most apt to be present. From this feeling alone the woman makes a diagnosis that "something has happened to her womb." Shock, as would naturally be expected, exists in greater or less degree, depending largely on the amount of concomitant injury. Painfulness and increased frequency of micturition, and extremely painful defecation, are later symptoms if treatment is not prompt. A tumor presents only in the rare cases of procidentia or extreme prolapse.

The *physical signs* early are similar to those of the same dis-

placement due to disease. The chief difference is that with a retroversion due to injury the organ is apt to be more or less firmly incarcerated or jammed down into the hollow of the sacrum. The tissue relaxation, so characteristic of chronic prolapse, with or without retroversion, is wanting.

The *diagnosis* should not be difficult with a full history and careful examination, possibly with the aid of an anesthetic, should the patient be a virgin or particularly nervous. The question as to whether the dislocation is or is not due to an injury, even when seen early, may be difficult to decide in some cases; but the differences previously noted among the physical signs should aid the determination of cause.

The *prognosis* is, generally speaking, good. If the displacement can be reduced within a short time the ligaments retain their elasticity, and the position remains good. If seen late, the chance of a permanent reduction of the dislocation is more remote for the reason that the supports of the organ have lost their tone.

The *treatment* if seen early consists of immediate replacement of the uterus in its normal position, and, if necessary, holding it in place, while the damaged ligaments regain their tone. Tamponing for a few days and rest in bed is a safeguard. The knee-chest position will prove most useful. Use of an anesthetic may be wise. The avoidance of violent exercise for some time should be directed.

The matter most certainly has a *medicolegal aspect*. Cases, most commonly railroad negligence suits, are constantly coming up in which the chief or only injury consists of an alleged uterine displacement due to violence. My belief is that bona fide cases do occur, but that in many of such suits a preexisting displacement, possibly unknown to either the patient or her physician, is held to be a result of the accident. It may be extremely difficult or even impossible to determine the true state of affairs.

The cases I wish to report are as follows: Miss B., a virgin, 17 years of age, while riding a bicycle, ran into a wagon and was thrown violently, striking the pavement on her buttocks. She was at once taken home in a cab. I saw her some three hours after the accident. There were no external evidences of injury, except that she was still suffering quite decidedly from shock. She had been much nauseated, having vomited several times. She complained bitterly of pain and bearing-down sensations in the sacral region and some desire to defecate. She remarked that

she felt as though she were menstruating, only decidedly worse. She had finished menstruating one week previously, and had urinated about an hour before the fall. A rectal examination showed a uterus a little below the normal size firmly wedged down into the hollow of the sacrum. Upon sufficient pressure from below it was released and sprang back into normal position. Relief from severe pain and nausea was almost instant. She felt perfectly well after resting in bed a few days. Further examination was refused, but my belief is that the organ stayed in place.

My second case is one that I believe is unique in literature because of the fact that the position of the uterus was positively known twenty-four hours before the accident. On this account I wish to emphasize it as much as possible. Mrs. N., age 24, married five years. One miscarriage at about three months, five months after marriage. Has never been pregnant since. Applied for treatment because of the sterility. Her history led me to suppose that she became infected with gonorrhea from her husband soon after marriage. She gave no evidence of inflammation of the uterus or appendages at the time of examination. Uterus was normally movable, of moderate size, and slightly ante flexed. The only condition that I could detect that might possibly cause sterility was a pin-hole os. She came to the office twice a week for dilatation for about a month, missing one week while menstruating. Two weeks after the menstrual period, and the next day after having visited the office for treatment, I was sent for hurriedly. I arrived about an hour and a half after her accident, which consisted of falling backward from the fourth or fifth step of a step-ladder, and striking on her buttocks and back. She had emptied her bladder and rectum a half hour previous to the fall. She complained of nausea, headache, weakness, and intense pain and bearing-down sensations in the sacral region. Vaginal examination showed a retroverted and prolapsed and incarcerated uterus, which was restored to its normal position only on the use of a considerable amount of pressure applied in Douglas' cul-de-sac. Relief of the symptoms was prompt. She was kept in bed three days, and lamb's wool tampons were used. She made a perfect recovery. She came to the office two or three times more for dilatation, but on discovery of the fact that the husband had apparently had a double epididymitis treatment was stopped. No tendency to prolapse or retroversion was discoverable three months later.

In neither case have I been able to determine a predisposing cause. Surely all the known predisposing causes were absent in the latter, and I am satisfied in my own mind from this case that uterine displacement from injury does happen without discoverable predisposing cause.

936 ST. MARKS AVENUE.

VOLVULUS OF THE INTESTINE.*

REPORT OF SIX CASES.

BY

GEORGE TULLY VAUGHAN, M.D.,
Washington, D. C.

VOLVULUS at one time was used synonymously with ileus and meant almost any form of intestinal obstruction, but now it is limited to such cases as result from turning, rolling, or twisting of the bowel. According to Rokitansky there are three forms of volvulus, as follows: (1) The rotation of the bowel on its own axis; (2) the rotation of a loop of intestine around its mesenteric axis; and (3) the intertwining of two adjacent loops of bowel. The first and third varieties are rare, and when volvulus is mentioned we usually have reference to the second variety. Volvulus is much more common now than formerly, or rather it is more frequently recognized, probably because of the greater frequency of abdominal operations for intestinal obstruction. Gibson gives it fourth place as a cause of acute intestinal obstruction, causing 12 per cent. in 1,000 cases requiring operation. Volvulus not only causes intestinal obstruction, but often by twisting the mesentery it stops the circulation, causes venous thrombosis, strangulation, and gangrene of the intestine. Yet, not in all cases does it close the lumen of the bowel completely. There may be sufficient obstruction to the blood supply to produce strangulation and yet blood from the strangulated gut may be vomited or passed by rectum. Sometimes, on the other hand, the circulation seems to be slightly, if at all, affected, although the lumen of the bowel may be closed. The portion of mesentery involved varies from the part attached to a few inches of intestine to the entire mesentery which is attached to about twenty feet of small intestine. It has been estimated that less than one-third of the cases of volvulus

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occur in the small intestine and over one-half of the total number in the sigmoid flexure of the colon. Some of the *causes* of volvulus are male sex, abnormally long mesentery, cicatricial adhesions, tumors, hernias, traumatisms, and anything which causes exaggerated peristalsis. Indeed, it is thought that many cases of colic which recover without treatment are really volvulus which has righted itself. No age seems to be exempt. Sometimes the condition seems to be caused by purgatives; at other times by blows on the abdomen. Of the six cases which I have seen three were associated with, and were probably caused by, hernia. It is a difficult thing to recognize. Some of the operators have made mistakes after opening the abdomen, taking the twisted mesentery for the ligament of Treitz or for retroperitoneal hernia. In only two of the cases I have seen was the diagnosis made previous to operation. The diagnosis was usually narrowed down to one of four or five conditions: Internal hernia, bands, mesenteric embolism, or volvulus. The chief *symptoms* are pain in the abdomen often transmitted to the back, vomiting, obstinate constipation, swelling of the abdomen, and often circumscribed tympanites. Sometimes a tumor or mass may be felt through the abdominal walls. Both the vomitus and stools sometimes contain blood, and bloody serum is often effused into the peritoneal cavity where it may be detected by the boggy and fluctuating sensation given to the finger on rectal or vaginal examination. No doubt some of the cases reported under the diagnosis of mesenteric thrombosis are primarily volvulus with torsion of the mesentery. The temperature is frequently subnormal and the pulse finally becomes rapid. The clinical course varies in length—death may occur in less than twenty-four hours or the condition may become chronic, depending on the degree of obstruction and strangulation, the amount of intestine involved, and other factors. Gibson's statistics showed that the mortality, in spite of operation, in volvulus of the small intestine was seventy-six per cent., while it was only forty-six per cent. when the large intestine was affected. This difference is probably due chiefly to the fact that with the large intestine only a foot or two in length at most of the mesentery is involved, while when the small intestine is affected almost the entire twenty feet may become twisted and gangrenous. Four years ago I collected twenty cases of volvulus with torsion of the entire mesentery to which my two cases were added, making twenty-two in all—all that I could find in the literature. Includ-

ing both large and small intestine, I have seen six patients with volvulus, four of whom were operated on with three recoveries. Following is a summary of the six cases:

CASE I.*—Male, colored; aged sixty-two; operated on for strangulated hernia. The intestine was reduced after opening the sac, when a coil of black, gangrenous intestine came down. It was thought to have been twisted in the abdominal cavity and held in place by the hernia which was fixed in the scrotum. Twenty-eight inches were resected and a Murphy button used. Recovery.

CASE II.*—Male, colored; aged thirty-five; with scrotal hernia; was taken one night with cramps, pain in the bowels, and vomiting, which continued until the afternoon of the next day, about twenty hours, when death occurred. The necropsy showed a large quantity of bloody fluid in the peritoneal cavity and a mass of gangrenous intestine containing bloody fluid. On careful examination the mesentery was found twisted half around a circle from right to left. The superior mesenteric vein contained large thrombi and the gangrenous mass included thirteen feet of small intestine, the cecum, and appendix.

CASE III.†—Male, white; aged twenty-two; taken with cramps, pain in the bowels and back, and vomiting. Slight constipation at first followed by bloody stools. These symptoms continued for ten days, when there were rigidity and dullness of the right side of the abdomen, tenderness all over the abdomen, and a mass could be indistinctly felt on the right side. Rectal examination revealed a bulging in the rectovesical pouch. The diagnosis was narrowed down to volvulus or intussusception—probably the former—and operation advised and accepted. A twist of the entire mesentery half around from right to left was found with venous thrombi in the mesentery. About one-third of the small intestine was very much smaller, congested, and contained dark material. At least two quarts of bloody fluid were found in the peritoneal cavity. The mass of intestines was taken in the hands and turned so as to untwist the mesentery. About this time the patient began to vomit and a large quantity of tarry fluid escaped through the mouth and nose, almost producing suffocation. Recovery followed.

CASE IV.—Female, white; aged sixty-two; admitted to George-

**American Journal of Medical Sciences*, May, 1903.

†*International Journal of Surgery*, 1903.

town University Hospital with a strangulated left femoral hernia. She refused operation and died about forty-eight hours after the symptoms of strangulation began. At the necropsy a portion of the ileum about one inch long and twelve inches from the cecum was found in the femoral canal in a gangrenous condition. The portion of mesentery attached to this coil was found twisted from right to left and constricted a loop of intestine about two feet in length above the hernia—the mesentery being held in place in its constricting action by the fixation of the hernia in the femoral canal. Reduction of the hernia permitted the untwisting of the volvulus. The intestine forming the volvulus was distended with gas, inflamed, and presented several dark areas scattered over a field of intense congestion.

CASE V.—Male, colored; aged fifty-one; was admitted to the Emergency Hospital with a history of pain, vomiting, tympanites, and complete intestinal obstruction, which came on six days before while he was exerting himself strongly at work. On examination the abdomen was found greatly swollen and tympanitic, especially in the hypochondriac and epigastric regions. A diagnosis was made of obstruction of the colon from volvulus, tumor, hernia, or bands, and the abdomen was opened a little to the right of the median line between the navel and ensiform cartilage and the enormously distended sigmoid flexure was found almost filling the abdominal cavity and extending up against the diaphragm. It was about three feet in length and three inches in diameter. The two limbs of the flexure were traced to the left iliac fossa, where they were found to cross and over the point of crossing a broad band was found passing from above into the pelvis. Drawing on this band brought up the collapsed small intestine from the pelvis—the “band” being the mesentery of the small intestine. The sigmoid was then uncrossed by turning it around, the contents withdrawn with a small trocar and cannula, the small opening closed with a suture and the operation hurriedly brought to a close as the patient's condition was bad. Death occurred four days later, probably from toxemia.

CASE VI.—White child, aged two years and four months, was admitted to Georgetown University Hospital. History as follows: Three weeks before she was taken with severe pain in the bowels, but seemed to get over the attack. Eight days before she was again taken with severe pain in the bowels, soon followed by vomiting, which continued for thirty-six hours. This was fol-

lowed by obstinate constipation, there being only one small passage for seven days in spite of purgatives and enemata. The child did not suffer much after the vomiting ceased, but would eat nothing. Examination showed the child to be in good condition apparently, cheerful, and able to walk about. The abdomen was slightly distended, and on palpation a mass could be felt on the right side about the brim of the pelvis. A diagnosis of intussusception, hernia, or volvulus was made and operation advised. The abdomen was opened through the right rectus muscle and the sigmoid dilated to about three times its normal size was delivered. The exact nature of the twist was not made out, as the fixed part in the left iliac fossa was not visible, but the loop was adjusted by tracing the limbs to the descending colon and rectum respectively. The entire small intestine was examined from the cecum to Treitz's ligament and seemed to be perfectly empty—a fact which partially explains the absence of vomiting after the first thirty-six hours. Nothing else abnormal was found except enlargement of the mesenteric glands in the ileocecal region. Uneventful convalescence followed, the bowels acted spontaneously on the third day and there was no further trouble.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

*The Thirty-second Annual Meeting, Held in Washington, D. C.,
May 7, 8, and 9, 1907, in Conjunction with the Congress
of American Physicians and Surgeons.*

(Continued from page 843, Vol. LV, June, 1907.)

The papers of Drs. REYNOLDS, FRY, and DAVIS were discussed jointly.

Dr. EGBERT H. GRANDIN of New York said the conclusions and arguments of Dr. Reynolds were in accord with those which he reached in a thesis presented to the Society seventeen years ago, entitled, "A Plea for the Elective Cesarean Section." He then contended that this operation was ideal, and although seventeen years had elapsed, it still remained, in his opinion, the ideal operation. Until the general practitioner was taught to send for the skilled abdominal sectionist, the elective Cesarean section would not be established as the ideal operation, either in the minds of the profession or in the minds of the laity. Cesarean section was the simplest procedure in the whole range of surgery. There was no blood-vessel to be tied, and all the operator had to know was how to sew up the uterine incision, and when the incision broke

down it was probably because of the fault of the operator in not knowing how to tie his catgut.

Another reason why the elective Cesarean section had not secured a firm hold as yet was because of the difficulty in determining the size of the fetal head. We could measure accurately the pelvis, but could not measure accurately the fetal head, although a near approach to such a method of external mensuration was offered to the Society last year by Dr. Stone. He had been invited to witness two elective Cesarean sections, but before he could get to the hospital the child was born.

With reference to pubiotomy, he had never done it. The impression he tried to convey to Dr. Fry in writing him was that he would advise pubiotomy over symphyseotomy, even though he had done two symphyseotomies, with living mothers and living children, and so far as he knew there was no disability on the part of the women.

With regard to vaginal Cesarean section, he could not conceive where it was called for when the fetal head was movable above the pelvic brim. With the head partly engaged, perhaps in preference to symphyseotomy, certainly in preference to futile attempts at delivery with forceps, he might resort to vaginal Cesarean section. His experience with elective Cesarean section comprised six cases, with six maternal recoveries, and six living children; while his experience in delayed Cesarean section had been three Cesarean sections, one maternal death, and three dead children.

DR. LAPHORN SMITH of Montreal endorsed what had been said by the readers of the papers, although he condemned pubiotomy. Last summer he performed two Cesarean sections and could testify to the surprising ease with which the operation was performed in both cases. In one case he removed the child, placenta, and membranes all in one piece. The woman made a complete recovery.

In the other case the woman had puerperal convulsions. She was comatose at six o'clock in the morning, with no sign whatever of dilatation. He treated her with *veratrum viride* and morphine, but by four o'clock that afternoon he did Cesarean section, and although the child was not quite seven months old, it was now living and well.

He endorsed everything that Dr. Davis and Dr. Reynolds had said about not waiting too long before interfering, although in one of his cases he tried to deliver the woman once with great difficulty with forceps, after having prepared her for a symphyseotomy. Twice she had had craniotomy performed by doctors in the first and second deliveries. Two children were born without assistance after long labors. This time, after trying forceps for an hour, he resorted to Cesarean section. The woman recovered and did well, although the child died almost immediately afterwards.

DR. JAMES CLIFTON EDGAR of New York said he was in doubt

where to draw the line between classes 1 and 2, mentioned by Dr. Reynolds, that is, the antepartum cases, and the early intrapartum cases. Dr. Reynolds had said, from an analysis of his cases, that he got a mortality in classes 1, 2, and 3 of 1.2 per cent., 3.8 per cent., and, he thought, 12 per cent. It occurred to the speaker that if class 2, or the early intrapartum class, was moved a little forward, and the woman not allowed to stay in labor quite so long, the mortality of 3.8 per cent. would approach one per cent. in the antepartum cases. It was a common observation that in cases of frankly antepartum Cesarean sections, where an operation was undertaken during the latter part of pregnancy, there was difficulty in securing good drainage. In the wards of one hospital with which he was connected women suffered from a mild sapremia, and the reason for that was difficulty in securing good drainage in the frankly pregnant cases. He would prefer that operation during pregnancy be brought up to the preparatory stage of labor, if possible, or in the beginning of the first stage of labor, and no further. He believed further statistics in years to come would show that if we elected a time in the preparatory stage of labor the mortality of three per cent. could be reduced by reason of the better drainage secured at that time. Anyone who had had experience with dilating the cervix at the time of operation knew there was a good deal of traumatism connected with it to secure sufficiently good drainage in the subsequent puerperium, and it was customary in New York to put a piece of gauze in the cervix to carry out drainage as well as possible.

With reference to the subject of pubiotomy, while he had not had any personal experience with it, it was an operation that did not appeal to him. He had done six symphyseotomies, and the reason he classed pubiotomy with symphyseotomy was on account of the morbidity to the mother, not so much the mortality; and, as Dr. Fry had referred to phlebitis occurring in a number of cases, the history was somewhat the same in regard to symphyseotomy; there was a large morbidity by reason of the large number of cases of phlebitis.

With regard to the character of the cervix, a point emphasized by Dr. Davis in his paper, there were certain cases of large cervixes which would resist the induction of labor, and for that reason he thought the limitations for the induction of labor as the years rolled by would become narrower and narrower; we would induce labor less frequently and less early, by reason of those cervixes, and for one other reason, namely, the average primipara would not stand much punishment.

DR. ROBERT A. MURRAY of New York thought the time had come to collate the experiences the members had had in order to get definite ideas as regarded what to suggest to patients both in hospital and in private practice.

The object of labor was not merely for the woman to have a child, and the further object of the accoucheur was not merely

to deliver a woman, whether the child be alive or dead, or to extract it from a dangerous position, but it was to deliver a woman and give her a living child; and, furthermore, to leave her in a condition so that she could fulfill her position in society and, possibly, if she so desired, have children again. We did not accomplish all of our art in getting a patient out of a dangerous position which she had gotten into by being pregnant. It was with great pleasure he saw we were going back to the position where normal labor and normal recovery were desirable. No man could call an induced labor by any means an easy thing. There were very, very few cases where there was not some danger to the parts immediately accessible from infection, and a tremendous danger of morbidity. If we took the cases brought up to labor, if we had avoided interfering with the cervix, the statistics for mother and child were far better than if we tried in a preliminary way to dilate the cervix.

He was very glad to have heard the point brought up by Dr. Davis, and emphasized by Dr. Edgar, about the condition of the cervix, and how difficult it was to get efficient drainage after. In the cases which he had seen of trouble from infection, relief could have been afforded by good drainage.

He thought in the vast majority of cases we would gradually get to the point where we would let the woman go to labor prepared to do a Cesarean section, and not interfere with high forceps, version, or any other method that would produce traumatism of the cervix, and possibly bring about infection which would defeat the result that we would otherwise get from a clean Cesarean section.

DR. ROBERT L. DICKINSON of Brooklyn, N. Y., said that the character of the labor was of the greatest importance as bearing on elective Cesarean section. Dr. Edgar, however, had made an important qualification by saying that in vigorous women we sometimes failed in our prognosis entirely, although Dr. Reynolds had met this with a negative proposition on which he laid stress, namely, that we could often foretell a difficult labor because of chronic toxemia or because of chronic neurasthenia. The only case of Cesarean section the speaker had lost was a woman who suffered from toxemia throughout her pregnancy. She was operated on at the beginning of labor pains, and gradually succumbed from lack of resistance after an easy Cesarean section.

For many years, he said, we have had control of the second stage of labor; with Cesarean section, with forceps and version we could do what we chose. But he thought we had stood helpless before the difficult cases of dilatation and before badly developed cervical conditions.

It was unobstetrical to insert a bougie into the uterus, as it might loosen the placenta and be the means of carrying infection, inasmuch as one could not be sure of absolute cleanliness.

DR. GEORGE GELLHORN of St. Louis, Mo., said the remark had been made that the object of labor was for the woman to bear a

child, not merely to deliver her. He would add that the object of labor was to leave the woman in the best possible condition. It seemed to him that in elective Cesarean section this could not always obtain. If we performed a Cesarean section from relative or absolute indications, we took the consequence of an elective Cesarean section; we had to weigh the matter of whether we were entitled to subject the woman to the danger incident to the operation. Dr. Reynolds surely had had wonderful success—no mortality whatever. But his experience had not been the same as that of other operators. About twelve years ago he assisted Bumm in doing an elective Cesarean section of the nature referred to by Dr. Reynolds, but the woman died. He had heard of other deaths from Cesarean section to-day by Dr. Grandin and by Dr. Dickinson. Aside from the mortality to the mother, the number of cases of spontaneous rupture of the Cesarean section wound in the course of future pregnancy was constantly increasing. Within the last three years twelve cases had been reported, and he was quite sure there were a number of other cases of rupture after Cesarean section that had never been reported.

The same objection held good as to pubiotomy or symphyseotomy.

He had under his care at present a woman whom he expected to operate on next week. This woman had had a pubiotomy or symphyseotomy performed (he could not make out which) three years ago. At that time she had a moderately narrow pelvis. To-day, from the effect of a callus that had not been reduced, she had a highly contracted pelvis. Moreover, she had a retroversion bound down by adhesions; she had deep cervical lacerations; she had a tear of the perineum, including the sphincter, so that in his opinion pubiotomy or symphyseotomy was not the operation of choice. He had done but two craniotomies in his professional life, but in a case of moderately contracted pelvis, where confinement was attended with many difficulties, he would not hesitate to do a craniotomy and induce labor at the end of the pregnancy. He thought there were conditions which justified this operation. He performed this unpleasant operation a week or ten days ago, the woman having been in the hands of two physicians for twenty hours, and numerous futile attempts having been made to extract the fetus. He added another hour and a half of work with forceps, but finally gave it up and did a craniotomy. He thought if we induced labor at the thirty-sixth week, so far as we could determine it by any means, by hydrostatic bags, we would obtain the same results as from any of the operations mentioned, with less danger to the mother and child.

DR. SETH C. GORDON of Portland, Me., said that for several years he had not done very much obstetric work, but he had had three cases of induced labor in his life, with the best results.

He mentioned the first case. The boy whom he delivered was now twenty-two years of age, the son of a New York mil-

lionaire. The mother had had three craniotomies done. He did one, while the other two were done in New York. She came to Portland again, where she formerly lived, was pregnant, and he determined then he would induce labor, which he did at about the thirty-sixth week. Each child she had given birth to by craniotomy weighed eleven or twelve pounds. In a case like that, with a good pelvis, but disproportionate child, and a fetal head of solid bone, he had no doubt the induction of labor was the best thing. He had no difficulty in inducing labor in either of the three cases. In each case the mother and child did well.

He was disposed to disagree with Dr. Reynolds as to the elective Cesarean section. If one waited until the time of delivery, and then operated, having estimated the obstacles, having fully determined that Cesarean section was the best operation to do, doing Cesarean section after the first labor pains began, it was all right. He thought Cesarean section was going to have a much wider field than it ever had before, and the results would be far better than any attempts at delivery of the child that had been made heretofore.

DR. MALCOLM MCLEAN, New York, called attention to the time at which interference should take place in a given labor. If his experience counted for anything, it brought him face to face with the fact that in this rapid surgical age there was too much interfering with labor cases at entirely too early a period. This predicated that there was going to be difficulty with the dilatation, and very often obstructions to the delivery of the child were supposed to be due to faulty structures, either of the bony or soft parts, which were simply faulty because they had not been allowed to go through their physiological changes. In his experience this was not a small factor. In consultation he had found himself undertaking operations, even Cesarean section, in cases where delivery could have taken place normally, if allowed to go a sufficient number of hours.

Within seventy-six hours he had been called to a case where such a serious operation was proposed on account of difficulties confronting the obstetrician. The woman was a primipara. She was taken sick at one o'clock in the morning, and at nine o'clock that morning they called for a consultant to assist in delivery by one of the major operations mentioned. It seemed to him nothing further need be said regarding that case. While he did not oppose the able plea that had been made for this operation, still he fully recognized the danger that might come to ambitious operators in obstetrics, who were not sufficiently capable of judging when that operation should be done. The danger was that in this age, when it could be shown that with good, clean surgery the abdomen might be opened, the uterus opened, the child delivered, and both lives saved, that operation might be done in cases where a comparatively normal labor could be consummated. This was not good obstetrics, and he thought it should be avoided.

He endorsed what Dr. Dickinson had said about the hydro-

static bag of Pomeroy. He had had experience with it. It was made on a different principle, and was superior to all other bags that had gone before.

DR. WILLIS E. FORD of Utica, N. Y., was sorry the members took so serious a view regarding pubiotomy. He had been looking for a case for a number of years, but had not encountered one. He would relate the experience, however, of another practitioner who, in doing a pubiotomy, broke the pubic bone, which was followed by the extrusion of the intestines through the opening. He left the woman; another physician was called, and the speaker got there in the night. The urethra of the woman was torn off lengthwise, lay in the bottom of the pelvis, but was not severed crosswise, and was still attached to the bladder. The perineum was torn, also the rectum, and he secured what union he could with this bone; he put back the intestines, secured what union he could by suturing its periosteum with catgut. The woman was much exsanguinated. This woman afterwards had a first-class pelvis. He did not know how much flattening she had; but she had sufficient flattening apparently to have justified that unfortunate pubiotomy. She has borne a child since. Of course, he had to repair her bladder, which was torn lengthwise; he repaired this twice before he could get perfect union; but a year later she bore her child easily. She had a flattened pelvis to begin with.

The discussion was then closed by DRs. REYNOLDS, FRY, and DAVIS.

OVARIAN PREGNANCY.

DR. J. CLARENCE WEBSTER of Chicago presented a specimen, and said that the Society now had records of two cases of ovarian pregnancy. The first case was reported by Dr. Thompson of Portland, Me., the specimen having been presented five years ago. Three years ago the speaker presented a second specimen. He was now able to present another specimen, which was almost identical with the one he showed three years ago, it having been given to him by Dr. Gunderson of Wisconsin. Microscopical examination revealed conditions practically identical with those described in his former paper, and therefore he would simply pass the specimen around. One could see the amniotic cavity with the embryo in position. The thickness of the ovarian tissue averaged perhaps half an inch, except the placental area, where it was thicker. There were several hemorrhages into the ovarian tissue, especially in the position of the placenta. The chorionic tissue extended around the amniotic cavity, and within this was the capsule of the ovary proper. Dr. Gunderson diagnosed the case before operation as one of ovarian pregnancy, and this was the first instance on record in which that had been done.

HERMAPHRODITISM (?); UTERUS AND TUBES REMOVED FROM A MALE.

DR. WEBSTER also presented another specimen. The patient

from whom the specimen was removed was a man, thirty-three years of age, who was admitted to the hospital with symptoms of acute peritonitis. He had had for many years an irreducible scrotal hernia, and it was supposed there was strangulation. An incision was made in the left inguinal region. No hernia was found, but a structure which looked like an adult uterus, tubes, and ovaries. The uterus was removed, and what appeared to be a cervix. It was adherent around the inguinal ring. The abdomen was opened rapidly, the patient being practically moribund by that time. The incision was closed, and nothing more was done. Subsequently the patient died. The specimen at first seemed like the adult female genitalia, but careful dissection and microscopic study disclosed both uterus and tubes, and what appeared to be ovaries were testicles. They occupied exactly the same position as the ovaries in the female. The mucosa resembled that which was found in the adult female.

Microscopic examination showed the glands were complex. The tubes had the characteristics of those of an adult female, except the fimbriæ were not so complex. There were fewer fimbriæ, but the relationship to the testicles was exactly the same. On one side there was more marked ovarian or testicular fimbria. On examination of the broad ligaments he found on one side a cyst. Both round ligaments were present, but on the side on which the cyst existed the round ligament was flattened out and thin. On careful dissection of the broad ligament there was a marked tube, about four millimeters in diameter, slightly convoluted, extending from the upper inner portion of the broad ligament toward the cervix. It was quite firm and had the consistence of a pipe stem. He pointed out the Wölfian duct and the vas deferens, also the cervix and prostate. The patient was the father of twin children.

DR. E. W. CUSHING of Boston reported the case of a man who had been operated on for hernia. In this case a uterus was found in the hernial sac.

DR. THOMAS S. CULLEN of Baltimore said that some years ago in that city there was found at autopsy in a child a complete set of both female and male pelvic organs.

METHOD OF CLOSING LAPAROTOMY WOUNDS.

DR. SETH C. GORDON of Portland, Me., said that the ideal closure of any wound was that which approximated closely each and every part of the divided surfaces and retained them a sufficiently long time for absolute repair to be complete, and this with the least amount of any foreign material to maintain the coaptation. Laparotomy wounds were no exception to this rule. The various locations of the wound might somewhat modify the details, but in any one there was usually a division of skin, fat, fascia, muscle, and peritoneum. Each one of these tissues demanded as careful replacement as any other in order that there

might be accurate repair and the scar tissue be free from deformity. There were several things to be attended to before any attempt was made to close the wound and these were essential to a perfect union.

1. The wound should be free from any ragged or bruised tissue and all bleeding should be absolutely checked. A blood clot might hinder repair, either by its separating healthy surfaces, thus forming a dead space, or by autoinfection, or direct infection become the nidus of pus. Hence all injured structures should be carefully removed and all bleeding vessels ligated with small sterile catgut. If there was any exposure of the surfaces to infection during the operation, they should be thoroughly sponged with a bichloride solution, followed by sterile water or normal salt solution before the introduction of sutures. It was absolutely safe to do this in any case, especially if the intestines had been manipulated much or for a long time. The hands or gloves might very easily become infected, even by this means, and the contact with the surfaces to be closed might thus impart some pus-producing germs. In the use of any solution about the wound, care should be taken that it should be as hot as could well be borne by the operator. Early union was hastened by careful attention to small matters of this kind. In preaseptic times hot water was a very valuable aid in the preparation of all wounds for what was then known as union by first intention.

In the selection of suture material a wide difference of opinion had been noted among surgeons. Since 1884 the author had used but two kinds of sutures, catgut and silkworm gut, the latter as through-and-through sutures in laparotomy wounds, and catgut for everything else. *First*, the suture material must be sterile. *Second*, it should be that which was the least liable to become infected, if by any chance causes of infection might arise. In laparotomy wounds it must be material which would give support sufficiently long to insure complete repair, so that danger from subsequent hernia might be avoided. Catgut alone did not fulfill all these indications. Absolutely complete repair did not take place in less than three weeks. If this were so, as pointed out by Warren, it would seem advisable and prudent to use a suture through the entire depth of the cut surfaces, which would not absorb in less than two weeks.

Complications, such as coughing, vomiting, distention by gas, and accidents that not infrequently occurred, might strain the parts to such an extent as to interfere with the normal repair and scar tissue result, which would after a time become the seat of hernia.

Fully impressed with the importance of these things, he had for many years closed laparotomy wounds in the following manner:

With a long, slightly curved needle, armed with a medium-sized silkworm gut, he introduced it from the peritoneum outward

through the entire wall, including not more than one-quarter inch of either peritoneum or skin. Each end of the silkworm gut should be carried from within outward, thus requiring a fresh needle for the second end, although with a little care the same needle might be threaded with the opposite end. With the utmost care that could be used, it was difficult to sterilize absolutely the skin except upon the surface; therefore, the deeper layers might contain germs of a noxious character, which might be driven down if the needle was introduced from above. Stitch abscess was a not infrequent accident, which was probably due to this. In his own experience, however, it had been almost unknown under this method of treatment. Silkworm gut sutures should be placed about one inch apart. After these sutures were introduced, he used a small, strong catgut to close the muscle and fascia, usually with a continuous suture, tying once at the middle, especially if the cut were long. Before tying the silkworm sutures he usually washed the wound with a weak bichloride solution, followed by sterile water or normal salt. Great care should be observed in tying the silkworm sutures not to compress the tissues, especially the skin, too much. Pressure on the sides of the wound would approximate the walls, which would relieve the tension on the sutures. If the edges of the skin were simply brought in touch a much better union would result than where the suture was drawn tight enough to depress the skin at that point. If the wound gaped between sutures, a fine catgut over-and-over suture, the entire length of the wound would completely close the skin. With a thin abdominal wall no intermediate sutures would be required if care were taken to straighten out the wound at the silkworm suture points. The ends of the sutures should be left long to prevent them from being encapsulated in the edges of the wound. After irrigating the surface he applied a plain gauze, maintained in place by adhesive straps, from which the covering was removed only at the point where it came in contact with the skin. In four or five days a fresh dressing relieved the disagreeable sensation, gave an opportunity to irrigate the parts, and to remove some catgut sutures. The silkworm sutures should remain two weeks, unless there were signs of infection. Before cutting them the surface should be thoroughly bathed with a bichloride solution, and the suture lifted, to be sure that it could be cut below the knot. Portions of a suture were sometimes left in the wound, unless this precaution was taken.

After the removal of sutures frequent dressings were advisable to prevent infection through the stitch-holes. All pressure on the scar should be removed as soon as possible after complete union had taken place. If an abdominal band was needed for general support no more pressure should be allowed over the scar than at any other point. Direct pressure on a scar tended to hernia. All patients having an abdominal section should be kept in bed

at least three weeks to avoid strain on the wound and thus prevent hernia. After three weeks it was safe to dispense with pads, bandages, etc., if primary union had taken place.

CONCLUSIONS.

"1. Careful preparation of the wound before closing, removing all loose tissue and obtaining complete arrest of hemorrhage.

"2. Through-and-through silkworm sutures, the needle always introduced from within out, to avoid carrying infective germs into the deep tissues.

"3. See that the omentum and coils of intestine are not caught in these sutures.

"4. Close the fascia and muscles with fine catgut by over-and-over suture, tying once at the middle.

"5. Use no buried suture that is non-absorbable.

"6. Avoid strangulating the skin by tying the sutures too tight.

"7. Allow the silkworm sutures to remain two weeks, cleansing the wound carefully before removing.

THE COMPARATIVE ADVANTAGES OF CATGUT AND SILVER WIRE SUTURES FOR CLOSING THE FASCIA AFTER ABDOMINAL INCISIONS.

DR. HUNTER ROBB of Cleveland, Ohio, said the ideal suture material should be smooth, pliable, but not brittle, not too costly, easy to obtain on short notice, and readily rendered completely sterile. Catgut would be an almost ideal material, but when it was sterilized short of rendering it brittle, and consequently useless, some few of the inner strands might not be absolutely aseptic. In fact, not a few cases of suppuration and even death had been directly traceable to the use of catgut ligatures. The cumol method probably gave the best results, but for the past two years he had had excellent results with the ordinary and chromicized catgut, as prepared by Van Horn of New York, especially when the smaller sizes were used. When, however, the larger sizes of chromicized catgut were employed, the sutures were not always absorbed, but frequently gradually worked their way to the surface of the wound and were then discharged. Moreover, they were not always sterile. Bacteriological tests made in his service had shown that the knots and ends of catgut sutures, even when the wound had healed by first intention, teemed with bacteria, and he felt sure that chromicized catgut was responsible for many of the skin infections encountered. Again, in one case of phlebitis following an amputation of the cervix in which chromicized catgut was used, he was inclined to attribute this complication to the suture material.

As to what was meant by an infected wound, in his clinic a more or less persistent rise of temperature, no matter how slight, was regarded as *prima facie* evidence of wound infection, and the case generally turned out to be such. If the skin edges of the incision were slightly separated, even when macroscopically no secretion

was present, he recorded these as instances of "slight separation of the incision."

Personally, he now preferred to use for the skin and peritoneum small sizes of sterilized catgut, but for the fascia he believed that silver wire offered advantages over the larger sizes of plain or chromicized catgut. These results were deduced from recent experience and largely also from an analysis of two series of 100 cases, each in which silver wire and chromicized catgut respectively were used in bringing together the deep fascia. This analysis showed that the relative incidence of infection in the deep fascia occurring after the use of catgut and silver wire respectively was as two to one. Moreover, he noted that when suppuration occurred, it was always larger in amount and extent in the catgut cases than in the infections met with after the use of silver wire. The main objection against the use of silver wire for bringing the fascia together was that one left in the wound a substance that might annoy the patient by sticking into the surrounding tissues. This trouble could be readily averted if the suture was properly applied and the ends were turned over with a pair of thin-jawed hemostatic forceps, so that they would form a ball-like end to the suture. This annoyance had to be remedied in only four out of 400 of the silver wire sutures. Removal under cocaine was always easy and painless. Since March, 1907, he had been boiling the glass tubes that contained the catgut for five minutes before the operation. He felt that this had given an additional security from sepsis.

So far as the occurrence of hernia was concerned, *à priori*, this accident should be less likely to occur after the use of silver wire, as this material undoubtedly approximated the tissues for a greater length of time and in his experience had given rise to suppuration less often. Hernia was not noted in a single case in either series, but separation of the fasci and muscle did not often take place within the first few weeks after operation, and yet sometimes, if these patients were examined some months or a year afterwards, a smaller or larger protrusion would be apparent. He had not infrequently noted such an occurrence in patients who had been operated on by other men, and he had no doubt that others had met with the same thing in some of his cases. So far as hernia was concerned, therefore, he did not believe we could judge of the relative value of the suture material except in cases examined at an interval of six months or a year after operation.

THE METHOD OF CLOSING THE WOUND.

DR. LE ROY BROWN of New York said it was of the greatest importance that we should use some means to approximate the fascial edges, so that they could be retained in apposition for at least two weeks. It was the experience of all that at one time or another with wounds that healed primarily at the end of the first week, in the ninth or twelfth day under a sudden jar, the result of coughing or sneezing possibly, the abdominal wound was opened.

This had occurred once in his practice, and on instituting inquiries and looking up the literature, he found that this accident had occurred with almost every surgeon, namely, that after the surgeon regarded the wound as having primarily healed and in excellent condition, under some sudden jar, resulting from sneezing or coughing, the wound might open in part or entirely. He thought the cause of this was some blood condition influencing the reparative changes, the exact nature of which was not known.

His custom in closing the wound was to bring together the fascial edges with chromicized catgut. He did not depend on this, however, but introduced, at the same time, some safety sutures of silkworm gut at say an inch and a half apart, and to see that they were kept in for at least two weeks. This would guard against the possibility of the accident he had referred to.

THE USE OF LAXATIVES IN THE AFTER-TREATMENT OF LAPAROTOMY.

DR. HENRY T. BYFORD of Chicago said that some laparotomies were of such a simple nature that the functions of the abdominal viscera were not materially disturbed thereby, and need not be disturbed afterwards by medicine. Exploratory peritoneal section and the removal of non-adherent ovaries were apt to be of this nature.

The majority of laparotomies should represent a different problem. The operation should ordinarily be of sufficient magnitude to justify its performance. Pathological conditions of abdominal viscera, epithelial abrasions of visceral surfaces, displacement of intestinal coils, exposure of the tissues to air, sero-sanguinolent effusions from sutures or abraded spots, one and all, caused more or less post-operative intestinal atony, visceral adhesions, and septic infection. For twenty-four or thirty-six hours before the operation it was usually considered advisable to relieve abdominal tension and intestinal fullness, and thus secure a favorable field for operating by a restriction of the diet and the administration of laxatives. And there was no doubt but what the dieting and catharsis contributed to post-operative intestinal atony, and that such atony was prolonged by the fasting that was usually necessary during the recovery from the anesthetic, as well as from the mere effects of the operation.

As the result of this intestinal atony, loops of intestines would remain in contact with the injured or abraded surfaces long enough to become firmly adherent; as a result of the adhesions, the intestines became distended; as the result of the adhesions and distention, a displaced loop of intestine might become depressed, kinked, or paralyzed.

When normal peristalsis was established early not only was this danger averted, but the intestines were relieved of much toxic or septic matter, absorption from the peritoneal cavity was facilitated, and the patient rapidly recovered her appetite and digestive functions.

After a laparotomy of ordinary magnitude, he did not take the risk of waiting for the patient to recover her appetite and eat

enough solid food to produce intestinal fullness and peristalsis, nor did he burden her disordered stomach with solid food for that purpose, but gave laxatives as soon as she could take them in order to restore through-and-through peristalsis and continued them later as necessary to secure daily evacuations of the bowels.

As to the method, the intestines should be stimulated to activity by means which produced the least irritation. The plan he had found most satisfactory was as follows: A full dose of cascara was given two hours before the operation, and an ounce of Hunyadi water every hour after she recovered from the anesthetic until the bowels moved and flatus was passed freely. If there was no voluntary bowel movement within twelve hours after the operation, a high enema of three ounces of glycerine and three of water was administered every two or three hours, according to emergency. If Hunyadi was not well borne, he gave a heaping teaspoonful of granular effervescent citrate of magnesia, or two ounces of the liquid citrate. In some cases calomel or cascara was more easily retained and might be used to better advantage. He preferred salines because they could be safely continued at short intervals for a long time without producing any lasting intestinal irritation. If flatus did not pass freely at the end of twenty-four hours, or if there was no evidence of active peristalsis, he added an ounce of spirits of turpentine to the enema and had the patient retain it as long as possible. Sometimes a high ox-gall enema acted better than glycerin, and might be used either with or without the addition of turpentine.

He never regarded the bowel movements or the expulsion of gas that came with the returning enema as proof of through-and-through peristalsis, but kept on with the laxative and the enemas until flatus passed freely between enemas; then he stopped laxatives, until the bowels stopped moving, and but little flatus was expelled, when he prescribed a small dose of some saline laxative night and morning until no longer required to secure daily evacuations.

Before the bowels moved the patient might complain of so-called gas pains, but these were partly relieved by each enema, and if she was told that relief would come when the laxative had worked she was usually willing and able to endure them. They were intermittent, and the oftener they came the sooner would they bring relief.

When there had been considerable trauma during the operation, with consequent soreness and inability to endure the pains, he applied an ice-bag to the abdomen rather than give opiates. The ice-bag and an enema containing thirty grains of chloral would usually alleviate the pain and nervousness, and sometimes the nausea, without inhibiting peristalsis.

It was the author's custom to give laxatives in all but the simplest cases, because in those who did not really need them the bowels were more quickly relieved of the gas, and the patient then felt much better than when not so treated. Patients who had un-

dergone a previous laparotomy generally remarked without being asked, that they were having a much more comfortable convalescence than after the previous one in which they had either taken no laxatives or had taken opiates for the pains.

THE AFTER-TREATMENT OF ABDOMINAL SECTIONS.

DR. A. LAPHORN SMITH of Montreal said that although the after-treatment of abdominal sections was important, he was rather inclined to agree with someone who said, several years ago, that the fate of the patient was sealed with the closing of the wound and her removal from the table. This was even more true now than it was ten years ago, for, owing to the better preparation of the patient and the Trendelenburg posture, combined with greater speed in operating, the after-treatment in the majority of cases gave us very little anxiety. Twenty years ago the intestines were exposed on the abdomen for an hour or more, during all of which time they were not only handled a good deal, but they were alternately heated and cooled by evaporating lotions in the form of towels wrung out of hot water. Now, the much better preparation of the intestines by the nurses before the operation, and the Trendelenburg position, allowed them to drop out of sight under the diaphragm, so that in the majority of even the most serious cases we hardly saw them, much less took them out of the abdominal cavity. This meant much less distention, which was largely due to intestinal paresis. This condition had also been greatly lessened by the use of strychnine for a few days before and after the operation.

There was another reason why the after-treatment gave much less anxiety now than formerly, namely, earlier diagnosis and operating, by which the whole classes of cases required shorter and easier operations, and consequently made smoother and speedier recoveries.

As to the management of the stomach of the patient, nothing whatever was allowed to enter it during the first twenty-four hours. If the retching was very severe, and nothing came up, he sometimes gave the patient two or three tumblers of hot water, with a few soda mint tablets dissolved in them, for the purpose of washing out the stomach. When this had been brought up the vomiting generally ceased. Whether it did or not, no more water was given until the end of twenty-four hours.

Most operations, even hysterectomies, were practically bloodless nowadays, the Trendelenburg position enabling the surgeon to see what he was doing, so that he could tie or clamp everything before he cut it. This had contributed toward diminishing the thirst.

If vomiting was very troublesome, there were three other simple means of arresting it. First, we might put a towel, wrung out of ice water, folded over and over until it was about four by six inches in size, on the throat, and change it every quarter of an hour or oftener. Second, a mustard plaster might be applied at

the pit of the stomach. What he had found the best of all was mist. rhei et sodæ, which contained ten drops of spirits of chloroform to the dose. He began with a teaspoonful every two hours, and, although the first few might be rejected, a little would remain down and soothe the stomach for the next, and before long a tablespoonful, three times a day, could be given, which would neutralize the acidity of the secretions, and clean the tongue more quickly than anything else, except calomel, of which 1-10 grain was generally given every hour until two or three grains had been administered.

The after-treatment of the bowels required careful attention. The more trouble the nurse had taken in preparing the patients before the operation, the less trouble they would give afterward. In justice to both patient and nurse the doctor should insist on the patient being in bed in the hospital at least forty-eight hours before the time fixed for the operation, except, of course, in emergency cases. If this was done, the nurse could have the intestines so emptied of food and gas when the incision was made and air rushed in they disappeared under the diaphragm, and after a flat gauze pad had been placed over them they were not seen again during the rest of the operation. In such a case the bowels would require very little after-treatment. As there would be nothing in the bowels for the first few days, there would be no need of purgatives. A soap-suds enema every morning would bring away a little gas and make the patient feel more comfortable. In many cases the thirtieth of a grain of strychnine, three times a day, before and after the operation, would expel the gas without any help, although in others a rectal tube left in for a few hours was necessary.

The most comfortable position after a laparotomy was on the side with the knees drawn up almost to the chin. This took the tension completely off the abdominal muscles and off the stitches uniting them. If the woman preferred to lie upon the back, the shoulders could be raised on pillows and the knees supported on the knee-rest, which was better than pillows. In a case of great loss of blood, as after a ruptured tubal pregnancy, we might have to lower the head and raise the foot of the bed in order to keep the brain supplied with blood; but in all other cases it was better to have the head of the bed raised so that any oozing lymph or blood might gravitate towards the pelvis, where there was more likelihood of its becoming encysted or absorbed, or where it could be evacuated by a vaginal incision into Douglas' cul-de-sac.

As to rest in bed, his practice in this respect had settled down to keeping patients who had undergone section in bed for three weeks. On the nineteenth, twentieth, and twenty-first days they sat up more and more in bed, and at the end of three weeks they sat on a chair and were instructed to take short walks. These walks were extended more and more, including going up and down stairs, and at the end of four weeks patients went home.

Many patients felt well enough and were well enough to get up four or five days after a section, but they were not allowed to do so, while others were still very sick two weeks later. Yet so quickly did these latter catch up with the former that by the end of three weeks they felt like getting up, and did so. A few cases closed with through-and-through silkworm gut, having learned that their children were sick, or that their husbands were misbehaving, had gone out in ten days, but they did so on their own responsibility, and, strange to say, were no worse, so that perhaps he had been erring a little on the safe side. But there were the unsuspected dangers of embolism, which sometimes happened, and he felt it was safer to keep them in bed three weeks.

ESERIN SALICYLATE AS A PROPHYLACTIC AGAINST ATONY OF THE BOWELS.

DR. HIRAM N. VINEBERG of New York said that at the present time he was not able to say positively whether this agent had a beneficial effect or not as a preventive of abdominal distention. It seemed to the members of the hospital staff that eserin salicylate had a beneficial effect, giving it in one-fortieth of a grain dose before the patient came out from under the anesthetic. The custom was to give one-quarter or one-eighth of a grain of morphine, with one-fortieth of a grain eserin salicylate. This agent had been used for a number of years by veterinary surgeons for colic in horses, and found to have a beneficial effect. Von Noorden, in 1901, was the first to use it on a human being. He was enthusiastic as to the results in cases of occlusion of the intestines. It was known that distention of the abdomen after a laparotomy varied in different cases. If we took, say, half a dozen cases that were operated on for the same pathological condition, two or three of them would present a great deal of abdominal distention, while the others would present scarcely any distention that was noticeable. The house staff, he said, were quite positive that patients did better and required far less enemata to move the bowels in sixteen cases in which eserin salicylate was used than in sixteen other instances in which it was not used. Eserin salicylate was contraindicated in cases of mechanical intestinal obstruction, or in cases in which there was beginning peritonitis, where the distention or paralysis of the intestines was due to peritonitis. It had been shown in experiments on lower animals that by giving eserin salicylate under such conditions, rupture of the intestine might follow, and a localized peritonitis might become general. He had used it in at least two hundred cases, and so far as he could judge there was no great perceptible difference between those cases in which eserin salicylate was given and those in which it was not given. In a number of cases one had to recognize the distention noticed after an operation as not being due to intestinal distention, but to distention of the stomach, and in these the agent was useless. It had no effect whatever. He had knowledge of

one case in another institution in which eserine salicylate was given before operation as a prophylactic, and the patient went into such a state of collapse that the operation had to be postponed. Experiments on animals had shown that it did not have a depressing effect on the heart, as was supposed, but, on the contrary, it had a rather stimulating effect, and had been used as a cardiac stimulant.

THE INCISION AND AFTER-TREATMENT.

DR. W. GILL WYLIE of New York said that the location of the incision varied with the internal condition. The method of closure varied according to the site of the incision. The method also varied with the condition of the bowels due to preliminary preparation.

HOW LONG MUST PATIENTS OBSERVE ABSOLUTE REST IN BED AFTER ABDOMINAL OPERATIONS?

DR. H. J. BOLDT of New York said that the day for a radical change in the after-treatment of patients upon whom abdominal operations had been done was not far distant was evident from the attention that this subject had recently attracted. The communications he had received regarding the matter had been numerous, and from some of them it was clear that his position as to the length of time that patients must remain in bed was not quite clear to certain members of the profession, who were under the impression that the practice of letting patients out of bed within twenty-four hours was invariably followed. He had never said that he always would let his patients out of bed within twenty-four hours, and he thought that his method had been fully explained in a recent article in the *New York Medical Journal*, January 26, 1907, in which he showed that a routine procedure was never followed. On the contrary, one should use discretion in adapting the after-treatment to the requirements of individual cases, and in deciding to what extent the treatment now generally in vogue might be modified.

A patient who vomited frequently should not be induced to get out of bed, nor should one whose pulse was arrhythmic or unusually rapid, or whose temperature was much above the normal. If, however, the condition was favorable, the mere fact that an abdominal operation had been done need not deter the surgeon from endeavoring to get the patient out of bed as soon as the effects of the anesthetic had fully passed off. He emphasized the necessity that, when this method of treatment was used, the abdominal wound should be properly sutured in layers, and catgut, which can in every respect be depended on, should be used throughout. Furthermore, it was absolutely imperative that a properly adjusted Scultetus binder, made of oxide of zinc plaster,

should be applied. He was even more convinced of the necessity of the binder than he was at the time when the paper referred to was read before the meeting of the Southern Surgical and Gynecological Association, because of an unfortunate mishap, the details of which he mentioned.

It was safe and beneficial to let a patient out of bed as early after an abdominal operation as was consistent with her general condition; not after slight operations alone, but also after the most extensive operations. Operations of such magnitude that the recovery of the patient was doubtful showed the most gratifying results and the most astonishing rapidity in convalescence if the patients were got out of bed within twenty-four to forty-eight hours. The early mobility induced better assimilation of food and made circulatory disturbances less likely; hence there was less danger of thrombosis and its consequences and less danger of pulmonary complications, which latter were of particular significance in the case of patients advanced in years. There was earlier intestinal peristalsis, which made intestinal adhesions less likely than in patients who were kept in the recumbent position, and consequently also earlier spontaneous action of the bowels. The better assimilation of food made it possible to begin with a generous mixed diet as soon after operation as the patient had recovered from the effects of the anesthetic, unless there was some contraindication. If there was no special reason for inducing an action of the bowels earlier than on the fourth or fifth day, the use of enemata or cathartics should be omitted until then, as a spontaneous action usually took place about this time.

There were some patients whose operations were such that it was likely that oozing from torn surface adhesions would occur, or perhaps peritonitis existed before the operation, or might follow subsequently, as from the soiling of the peritoneum with pus. These patients were kept in bed, with the head of the bed raised so as to obtain trunk elevation, as recommended by the late Dr. Fowler for diffuse peritonitis. He employed for this purpose a bed lifter, which he exhibited and demonstrated.

There were also patients, about 10 per cent. or 15 per cent., for whom early rising from bed was not desirable; for these it would be found beneficial, if the general condition did not contraindicate it, to recommend light calisthenic exercise with their lower and upper extremities while in bed for a few minutes at frequent intervals. This would improve the circulation.

It was essential that the abdominal wound be properly sutured, and no better closure than the tier method, with overlapping of the fascia as devised by Noble, could be employed for this purpose, with the use of trustworthy catgut for sutures.

It was unnecessary to go into the full details of this subject again. At the present time he desired only to emphasize the fact that early mobility of patients after abdominal section was superior to compulsory rest in bed.

AFTER-TREATMENT OF ABDOMINAL SECTION.

DR. J. MONTGOMERY BALDY of Philadelphia said what could be more diametrically opposed than one surgeon opening the bowels of his patient by the use of laxatives and enemata within twenty-four hours after an operation, and another allowing the bowels to remain locked for from five to eight days? And yet each method had its advantages, and the result in both had been good in various hands.

What was more antagonistic than the feeding of one patient as soon as an appetite was developed, and the practical starvation of another (on slops) for an indefinite time? The free use of morphine and its absolute prohibition? The administration of a stimulant and its absolute refusal? The enforcement of rest in the dorsal position and the privilege of free movement? The prolonged rest in bed and the enforced getting up within from twenty-four hours to a week? The continued administration of drugs on every pretext and their almost absolute withdrawal? And yet it must be admitted that all of these methods, diametrically opposed as they were, had been used with the utmost success, and would continue to be so used. Personally, he had been guilty of all these methods from time to time, and if his surgical experience had taught him anything, it had taught him this, namely, in the routine case, if his surgery had been satisfactory and the patient had gone from the operating table free from sepsis, hemorrhage, and shock, the after-treatment was of little importance as far as recovering from the surgery was concerned; it was principally of importance as to the relative comfort of the patient. What to him formerly appeared of great moment was now in the light of a wider experience amusing, and the petty details being continually threshed over seemed like making mountains out of a mole-hill.

He had found after the administration of ether a patient was both thirsty and sick at the stomach, and anything placed in the stomach would further irritate that organ. Rest and time were the great panaceas; consequently thirst was quenched by rectal enemata of warm water often repeated; nothing was administered by mouth, either food, drink, ice, or medicine. By the end of twenty-four hours nature had asserted herself, the irritation of the stomach had passed, the thirst was quenched, and the stomach was ready to digest and absorb. By this time the sting of the pain from the operation was considerably abated, and the patient was chafing under the enforced dorsal position. What was to prohibit her from drawing up her knees, shifting her body, or turning on her side? Absolutely nothing. Turning would do no harm; it would rest, it would relieve anxiety, and would often dissipate pain by encouraging peristalsis and the passage of flatus. If a patient had an appetite and desired something to eat, why deny it, or why make her swallow slops when she craved solids? What was there forty-eight hours after an operation in

the routine case which prohibited the eating of anything a person craved? He knew of nothing, and consequently allowed nature to dictate in all these matters.

Ordinarily, most people felt well when their bowels were moved daily, and there was no exception to this when one was sick. Because one got well and had not much tympany when the bowels were locked was no reason why the surgeon should violate the laws of nature when he knew that nature had at this time the extra burden of two extraneous and noxious substances which might with benefit be thrown off—ether and opium. He saw no reason why a bed-ridden person should be allowed to accumulate and absorb ptomaines and noxious substances any more than a well one. The effect of the first movement of the bowels on a patient was most marked for the better, and the earlier this was secured the sooner was the patient off the surgeon's mind.

There was probably no great advantage in keeping the ordinary patient in bed longer than two weeks, and there was a growing tendency towards lessening this time. As far as surgery was concerned this practice was perfectly rational. Wounds in other parts of the body healed up soundly in this space of time, and, if anything, peritoneal wounds healed more quickly. In many cases of abdominal surgery, however, there was a twofold object to be obtained. This was peculiarly so in the class of chronic or semichronic cases so often dealt with by gynecologists. A very large percentage of these patients, especially the hospital cases, were broken down neurasthenics, half-starved, illy-nourished, sexually-abused women, and the surgery was only a first step towards their recovery. Very many of these women, especially those operated upon for cystic ovaries, displaced uteri, torsion of the tube, and chronic appendicitis, or appendiceal colic, would be very materially benefited without an operation at all. In such cases an operation followed by an enforced getting up in two weeks was irrational, and in twenty-four hours was brutal. What these people needed most of all was rest, physical, dietetic, mental.

A few weeks' quiet in bed was of no serious import in the convalescence of patients, especially when these weeks of careful feeding and nursing and rest were productive of a very great amount of good health, such as many of these people had not known for years.

A surgical case might be gotten out of bed and home in a week or ten days, but he denied that this was best for them, or that this meant that their convalescence had been more rapid. The aim should not be to get them home in the quickest possible time, but to give them the best amount of stored-up health and energy with which to successfully meet the future. One who had gotten out of bed with health fully restored was surely more competent to meet the necessities of everyday resistance than one who had

been quickly put upon his feet with little regard to his general condition.

DISCUSSION OF THE SYMPOSIUM ON THE CARE OF THE WOUND AND
THE AFTER-TREATMENT OF LAPAROTOMIES.

DR. I. S. STONE of Washington, D. C., said that he had not had a case of obstruction of the bowels following any laparotomy since he reported his method of excising the stump after the removal of the tubes at the cornu of the uterus at the Atlanta meeting of the Section on Obstetrics and Diseases of Women of the American Medical Association.

With regard to treatment, the first thing he learned was that too much attention was paid to the preliminary treatment of these cases by purgation. For instance, a woman was brought in for operation; she had had nothing the matter with her intestines, yet the surgeon proceeded at once to irritate the entire alimentary canal with calomel. The blood-vessels were drained by giving salts. The serum in the body was depleted, and then she was exposed to a prolonged operation. Furthermore, as soon as the patient was able to swallow, she was purged again. This was frequently a routine treatment in every hospital. Very little was known about the care of patients by surgeons unless they personally visited the patients and watched them. This practice did not prevail to the extent to-day that it did formerly, and he was glad of it.

The paper by Dr. Baldy was timely, in that it came in between two extremes represented by Drs. Boldt and Byford. However, since hearing Dr. Boldt's paper, there was no doubt the essayist had influenced him materially with regard to getting a certain class of patients up early. He cited, for example, the case of a boy who had been attending school and was perfectly well until he was seized with appendicitis. The attack began in the morning. The appendix was removed that night. The boy was up and walking around his room in a week, and went home at the end of ten days, a distance of hundreds of miles, and returned to school two weeks later. This boy was certainly as well as anyone else now. There was no after-trouble whatever.

In regard to the after-treatment, the plan proposed by Dr. Byford had revolutionized his peace of mind. The plan the speaker had followed had given him no cases of intestinal obstruction after operation, and it consisted simply in letting these patients alone, giving them a little water if thought necessary. If vomiting occurred the stomach of the patient was washed out with a tube or with large quantities of water, giving no food the first day except albumin and water. He sometimes gave heroin and small doses of morphia when patients were suffering from the effects of a painful operation. He gave enemata to patients, as a rule, forty-eight hours after operation, and thought there were certain instances in which this ought to be done beforehand; but since he

had stopped purgation, only giving two ounces of castor oil, as recommended by Ochsner of Chicago, he had had no trouble from distention of the bowels. There had been no vomiting worth mentioning. He did not have to wash out the stomach in 1 per cent. of hospital cases, after anesthesia, where this plan had been adopted. He never gave milk under forty-eight hours, and rarely in the first week. The patients were not only comfortable, but apparently enjoyed being in the hospital instead of the opposite condition.

As to the use of croton oil, he would hardly dream of making use of such a purgative, although it had been used. In a case which required croton oil, the physician should look out and have the coffin ready, as almost all of those cases would die from the croton oil if they did not die from the disease.

DR. B. F. BAER of Philadelphia said that nearly twenty years ago he formulated simple rules as to the treatment of a patient during laparotomy, and they were these: The treatment should begin at least forty-eight hours before the operation. He soon learned that a better way was to empty and clean the intestinal tract by the use of Epsom salts, which he had adhered to to this day, in doses of one-half ounce, repeated in five or six hours if there was not a movement, or two or three, of the bowels. The skin was taken care of. The anesthetizer and the surgeon were important factors. After this no laxatives by the mouth were given. For years every patient operated on by him received before operation one-quarter grain of morphia hypodermically. This was not in any sense the opium treatment, and was altogether different from morphia given by the mouth. After that as much morphia as was necessary to keep the patient comfortable and to cause rest was given.

Diet was next in importance in the preparation. For years he had not given a drop of milk, vegetables, or fruit in the preparation. Since he had done this, and had used morphia occasionally, tympany was rare.

DR. WALTER P. MANTON of Detroit, Michigan, had changed his mind since hearing the papers, and believed that this question should be settled once for all. Dr. Baldy and he were not always agreed in matters, but he thought his (Dr. Baldy's) paper was one of the most sane and logical statements of the subject he had ever heard. In his experience with the insane he had come to practically the same conclusions as those arrived at by Dr. Boldt. He had had many insane women, who, following abdominal sections, got up within two hours after their return to bed, walked about the room, and spent part of the first twenty-four hours on their knees and in various other positions. This was noticed before the restraining sheet was used, and without the slightest harm, these women making a perfect convalescence. He did not believe, however, that this practice should be carried out generally. He thought that in certain cases the patients might get up within

a few days after operation, but that in the majority of instances the patients should be allowed to remain in bed fourteen days, inasmuch as we had to consider not only the abdominal wall, but the contents of the abdomen. Where a patient got up too early, in spite of the best prepared catgut, or whatever suture material was used, there was likely to follow a hernia, especially where a long incision had been made.

DR. EGBERT H. GRANDIN of New York said that if he were to be operated on he would not hesitate to have any member present do the work, but he would pledge the operator, *First*, not to use through-and-through silk stitches because they would act as drains from the skin to the peritoneal cavity. *Second*, to sew him up in layers, using plain catgut for the peritoneum, No. 2 chromic catgut for the fascia, and subcuticular plain gut for the skin. *Third*, refrain from placing cascara or salts into his stomach, as he would simply vomit them. *Fourth*, to give him all the water he wanted to drink, as it would wash out his stomach and stimulate his kidneys. *Fifth*, if pain existed, he would ask that codeine in 2½-grain suppositories be given, as taught by Fordyce Barker twenty years ago. *Sixth*, if he began to cough, he would ask that 1/5 gr. hyoscin hydrobromate be given, repeated every hour, until his pupils were as large as saucers. *Seventh*, the operator should not be afraid to give him the physiological antitode, which was morphine. *Eighth*, when he wanted Budweizer it should be given to him. *Ninth*, let him turn around in bed and do everything he wanted in twenty-four hours if the heart did not contraindicate it. *Tenth*, at the end of a week, after a simple operation, get him out of bed.

DR. LEWIS S. MCMURTRY of Louisville, Kentucky, in referring to the paper of Dr. Boldt, said that Dr. McDowell, in reporting the case of Mrs. Crawford, who was the subject of the first ovariectomy, stated that on the eighth day, when he visited his patient, he found her making up her own bed. After reproving her for her imprudence she laid down again. We had now reached a point where we could safely allow greater liberty and less restraint after these operations than heretofore. Certainly, the early getting up of patients after operations had some advantages. Everything about the work had been simplified. The after-treatment, as now advocated, had some advantages. There was no doubt but what the earlier patients got up after operations, the more cheerful was their convalescence. The state of mind had much to do with the digestive functions and with the metabolism of the body generally, and to get a patient up early stimulated the powers of nutrition; it improved the morale of the patient; the upright position materially aided digestion, so that one could see why the early getting up of patients after operations was of great advantage. On the other hand, neurasthenic and hysterical patients were not benefited by getting up early after operations. These were benefited very much by being kept at rest in bed. But

the average patient certainly had a brighter convalescence and suffered no harm from getting up earlier, or from being allowed to sit up earlier; but he thought this might be carried to an extreme. A patient after anesthesia of an hour and a considerable operation was not in a good condition to take up the burden of active life right away. There ought to be a reasonable time for the system to repair itself and for the strength to return before resuming work.

DR. BEVERLY MACMONAGLE of San Francisco, California, stated that some of the emergency cases that came to him required operation to be done within a few hours. Take the cases of appendicitis that had been going on for twelve, twenty-four or forty-eight hours; he felt he could not let them go along any longer without operating on them. After making the diagnosis at the hospital, and getting the abdominal wall as clean as possible, without injury to the skin, the results in regard to infection of the abdominal wound and in regard to healing of the wound, as well as the firmness of the muscles, were just as good as in the cases he formerly prepared for a week or three days before operating on them. Therefore he was not so loth to undertake abdominal section in an emergency case if there was sufficient time for a nurse or assistant to prepare the patient. An important point was to do enough washing and cleaning up to make the skin clean and not injure it. When sufficient scrubbing had been done to make a break in the epidermis the chances of infection by the staphylococcus were increased.

With regard to the incision, since surgeons had taken up muscle-splitting, wounds came together better and were firmer than they used to be.

DR. WILLIS E. FORD of Utica, New York, protested against the gridiron incision in appendicitis cases in which there was reason to suppose we had to institute drainage or where there was a gangrenous surface. When a blood count was properly made, knowing whether there was a leucocytosis or not, one could accurately determine whether drainage was going to be necessary or not, and the accidents he had seen in his vicinity, after early operations for appendicitis, had been very largely due to the gridiron operation, splitting the muscles, where an attempt had been made to put in a drain, instead of making an open incision, through-and-through muscle in case there was any sloughing tissue whatever.

DR. RICHARD R. SMITH of Grand Rapids, Michigan, suggested the use of a heavy silk ligature or relaxation suture, instead of silkworm gut, as usually employed. The silk was prepared, after the ordinary sterilization, by dipping it into melted wax, to which 15 per cent. carbolic acid was added. The suture material was rolled upon glass rollers and left in this mix in a water bath for an hour or more. When used, it was a double thread, so that the suture might be passed from within out. It did not include the peritoneum, but it included the muscle and fascia. This suture

had the advantage of being strong; it did not cut or break as silk-worm gut might do.

He indorsed what Dr. Grandin had said in regard to giving water following abdominal operations. He ordered the nurse to give the patient as much water as she desired, and thought it was a good method. But, like other good things, it might be carried to extremes. If the giving of water gave immediate emesis he discontinued its use.

DR. E. W. CUSHING of Boston, Massachusetts, said there was one matter that had not been touched on that was important, and that was to give no more ether than was necessary. He had been interested lately in the combination of morphia-scopolamin or morphia-hyoscin anesthesia on account of the small amount of ether that was required afterward.

With regard to the treatment of the wound, he had found that catgut, thoroughly baked, was sufficient to bring the fascia together, and if the fascia was coaptated accurately there was little or no danger of hernia. He had not seen a case of hernia in many years.

DR. CHARLES P. NOBLE of Philadelphia agreed with those who cleaned out the alimentary canal of the patient and gave plenty of water before operation.

As to getting patients out of bed early after operations, it seemed to him that, inasmuch as the great mass of patients gynecologists had to deal with were broken down, the rest in bed which they received after the usual method of treatment did as much to restore them to health in many cases as the operation itself. He had knowledge of one case of fatal embolism, and had heard of a number of hernias among patients who got up too early. In other words, the burden of proof rested on the gentlemen who wished to introduce this very radical innovation, and until they had enough experience to show others that thrombosis, phlebitis, and embolism were less frequent after this method than after the old one, the supposition was that the older method was the better.

DR. JOHN T. THOMPSON of Portland, Maine, spoke of two classes of cases. *First*, that class in which the abdominal wall was thin and where, from pressure of a large tumor, there was stretching of the recti muscles, but where there was practically enough of fascia left to make a strong wall. He pointed out the necessity of doing what had been alluded to in such cases, namely, overlapping the fascia, and the fact that we had to depend upon no muscular structure whatever. The other class of cases which he thought had not been mentioned, and which furnished a large number of hernias, were women with flat abdominal walls. He mentioned what he considered a good method of closing these walls, namely, instead of attempting to make a close-sewed skin incision, to put interrupted sutures at a distance of an inch, allowing the skin to gape, if it would, to a slight extent, and also allowing for the escape of the liquefied

fat which took place in these cases. This method he had tried in women with fat abdominal walls, thus allowing for drainage of liquefied fat, for as the closely-sewed skin would retain broken-down fat which easily became septic, it led to the breaking down of the abdominal wall.

Another point which occurred to him with reference to these cases was the occurrence of hernia, which was more likely in women before the menopause, in whom complete removal had been done. This result followed, not on account of any defect in the technic, but from the inevitable accumulation of fat in the abdominal wall, and a tendency toward degeneration of the recti muscles from this accumulation of fat in the abdominal wall, and the deposition of fat in the omentum, leading to undue pressure, so that a hernia which came on within a year was not due to a defect in technic, but to a defect in nature, whereby a deposition of fat occurred and rendered the wall weak.

DR. ROBERT A. MURRAY of New York pointed out the importance of keeping a certain class of patients in bed and nourishing them and getting them in a condition to take care of themselves. To make a rule to let patients out of bed in a week after major operations was wrong. It was futile. If this were done we might empty the beds, but he thought we did not cure the cases.

DR. WILLIAM M. POLK of New York thought there was a good deal in the position advocated by Dr. Boldt. As with all questions that pertained to abdominal and pelvic surgery, there were two sides, and these two sides had been ably presented by the gentlemen, and it came to the point emphasized by Dr. McMurry, that the personal equation must of necessity enter very largely into every single case. In very many of these patients it would be not only a hardship, but a wrong, to get them out of bed in the time specified after operations. On the other hand, it would not be wrong to get some patients out of bed early after operations—in fact, it would be a great pleasure and profit to them. They felt the need for action. Was it not possible to differentiate those cases in which it might be well to permit activity after operation from the other class? He suspected that if those who had had the widest experience looked back they would find that some of their worst cases of embolism had been those that had been nursed in bed with the greatest care.

THE PROPHYLAXIS OF VENEREAL DISEASE FROM THE STANDPOINT OF THE GYNECOLOGIST.

The President, DR. CLEMENT CLEVELAND of New York, selected this as the title of his Presidential Address.

Before discussing the subject proper, he thanked the Society for the distinguished honor conferred upon him in electing him President, a position once filled by his great and revered teachers—Sims, Emmet, Thomas, and Peaslee—to whom especially he owed the inspiration of his professional life; yet not to these alone,

but to other great names whose memory the Fellows cherished, and whose deeds had made the Society famous.

He referred to the loss the Society had sustained in the death of Dr. Fernand Henrotin.

In making choice of a theme upon which to address the Society, he was influenced by no expectation of being able to add new thought to the discussion of this question, but by a desire to stimulate and help to keep alive interest in it.

The position of the gynecologist regarding venereal disease was one of greater enlightenment than that of his brother of the general profession, because of his greater opportunity for observing it. From gynecology had come all the present-day knowledge of the effects of gonorrhea in women, and the inspiration for all that was known of its lasting effects upon men.

The profession was now fairly informed regarding the extent of the danger from venereal disease. The public, however, was still profoundly ignorant, and, as a rule, regarded gonorrhea as a trivial affair, easily cured and leaving no after-effects.

A fairly general conclusion seemed to have been reached that at present legislation would be of little avail. There were some who favored the regulation of prostitution, as was done in France and elsewhere in Europe. But public opinion in this country was so positively opposed to licensing such practices that a struggle to obtain it would be useless at present and would be a waste of energy that would be better spent in other directions. Moreover, the regulation of prostitution in France had not been a great success, and was likely to be abandoned in the near future.

The responsibility of enlightening the public did not rest with the medical profession alone. It could not undertake the task unaided. It was not a medical or sanitary problem merely, as the causes were dependent on social conditions beyond the control of the physician.

By constant study and agitation, the best method for reaching the people would be evolved. All medical schools should pay the greatest attention to instruction in venereal diseases and their consequences. Some were doing so. The student and physician could not be too often reminded of the responsibility which rested on them, not only in the treatment of these diseases, but as regards prognosis and sanction of marriage. Many thousands of young men with a gonorrhea uncured married, and with the sanction of their physicians, who, perhaps, had not been as careful as they should have been in giving approval. We must constantly teach the infected man that he was infectious and thereby dangerous.

The work was already being taken up by philanthropic institutions. All educational institutions, colleges, seminaries, and schools should have in their curricula courses upon sexual physiology and hygiene, and the instruction should be as much a matter of course as that on any other function or portion of the body. Some already had such a course established, and all would doubtless follow suit in the near future.

The situation as to methods was fraught with difficulties and perplexities, and they hinged chiefly upon the morbid hesitancy to talk openly and frankly of sexual matters.

Speaking for himself, President Cleveland said he was positively of the conviction that physicians should not play over the surface of the subject, but should get right down to the foundation of the matter and display it in all its ugliness. In this way only could they have any hope of making their influence felt and expect to reach any moral advantage.

He referred to the American Society of Sanitary and Moral Prophylaxis, started in 1905, with headquarters in New York City, which consisted of members of the medical profession and of the laity, including women.

To overcome indifference and arouse an urgent public sentiment in favor of the movement, there was no more powerful argument than the fact that the greatest sufferers from these diseases were innocent women and children. Constant preaching of this one fact alone would gain more supporters for the cause than all others combined.

The facts regarding the prevalence and results of these venereal diseases were better known by gynecologists than the general profession. Individual members of the Society had already been active in the matter and some had written admirable and stirring papers on these subjects. The Society, however, as a unit, had not taken the stand on the question which the times and its own exalted position would seem to demand. The Society had done great work, had become famous, and it was its duty to see to it that it retained its preeminence. This could not be done merely by writing papers on special subjects and holding annual meetings. It must take an active interest in all philanthropic movements in which the profession was embarked, and particularly such as the present one.

He thought it would be well to have a standing committee to report each year, to arrange for papers in symposium, to invite prominent men, such as Dr. Morrow, for instance, to read papers before the Society, or in other ways to make prominent the vital interest that was felt. By so doing the members would acquit themselves of any charge of inactivity and at the same time have the satisfaction of feeling that they were doing their share in helping on the good work. The members could not hope for the realization of Sir Thomas Moore's ideal commonwealth in the Island of Utopia, but they should have done something to avert the damnation which overtook Sodom and Gomorrah.

DR. BROOKS H. WELLS of New York then delivered an oration in

APPRECIATION OF THE WORK OF DR. HENRY J. GARRIGUES IN INTRODUCING ASEPSIS INTO OBSTETRIC PRACTICE.*

DR. ROBERT A. MURRAY of New York.—I can add little to the

* See page 1.

eloquent oration which Dr. Wells has just delivered. I was a colleague of Dr. Garrigues, and saw his work. I was very proud to be his colleague, and I know what the condition of the maternity was, how it was transformed, and how he got his fellows to work with him. Before this, if a woman was delivered by the interne there was no certainty that infection had not been produced. We had no means of preventing it. If the nurses made an examination of the patients, we had not the slightest certainty that we would not have another epidemic introduced. We could not enforce what should have been tried, namely, absolute cleanliness. Fortunately, at that time, Garrigues rose to the occasion and said we must have a change. Coincident with the change in the staff, we were able to institute measures to change the whole treatment. Dr. Garrigues, in carrying out his ideas, had a great deal of ridicule thrown on him because of his inclination to be so thorough. Yet, when we have serious dangers to combat, we must have radical measures. I am exceedingly glad to have this opportunity to add my word in honor of my colleague, and, to a certain extent, my master in obstetrics. (Applause.)

DR. EGBERT H. GRANDIN of New York.—I deem it an honor to be called upon to speak of my old friend, colleague, and teacher on this occasion. Fresh from Boston, the home of Oliver Wendell Holmes, the predecessor of Semmelweis; fresh from Paris, a student under Tarnier; fresh from Vienna, where I studied under Karl Braun, Spaeth, and Schauta; fresh from such scenes, where the mortality rate from septicemia sometimes reached 30 per cent. and the morbidity rate 95 per cent., I became the associate of Dr. Garrigues on the staff of the New York Maternity Hospital, and it was a revelation to me that he alone had accomplished so much in the face of ridicule. As a result of his teaching, mortality rate dropped to within one-quarter of one per cent., and morbidity rate practically to *nil*! It is too often the fortune of the average medical man to be abused; it is rarely his fortune during life to be praised. We honor ourselves, Mr. President, in honoring Dr. Garrigues; we honor our science in honoring him, for were he not so modest he might say with old Horace, "I have builded unto myself a monument more lasting than brass!"

As you round out your years, sir, and fill your allotted term among your pleasantest memories, may this occasion be so full, as it is, of esteem for you. You are one whom future generations of women shall rise up and call blessed, and when your summons comes, and you pass through the golden gate—which may not be as mythical as some think—perchance the angels themselves may fall down and call you blessed, while, as you "see your Pilot face to face," you hear from Him, as you do now from your colleagues, the words "Well done, thou good and faithful servant!" (Applause.)

DR. WILLIAM M. POLK of New York.—In December, 1864,

on a bright, cool morning, I took my way across the battlefield to Franklin, and as I approached the line of works I found it was with difficulty I could tread upon the ground without touching the dead. About five years later I found myself an interne in the Lying-in Service of Bellevue Hospital.

In the spring of 1870 there sprang upon all surgical work a wave of sepsis, which practically engulfed every piece of work that had traumatism as its associate. Sixty cases a month of confinements was then the record of that institution, and as I went on duty May 1, 1870, I found every bed filled with a septic case, and, as I advanced into the service, as I shifted to the dead-house those who had been there upon my entrance, I merely put in their places others, stricken as fatally as those whom I had originally found in their places, so that out of sixty cases of confinement which fell to my share during that month fifty-five passed into the dead-house, and of that number only two died of causes other than sepsis. Is it any wonder that, as Dr. Wells spoke of the glories that came from one species of destruction, and the glory which came from the checking of another species of destruction, and these two experiences were placed side by side in my mind, I should find myself in more than hearty accord with the eloquent words which he has pronounced upon the beneficent action of our Fellow?

It is easy, Mr. President, upon occasions like this, to ramble in the realm of sentiment; to gather from one's own experience, or that of others, words of praise to be uttered on these occasions; but, after all, it is too sacred an occasion to be dropped to such a level. We are here as representatives of one of the first medical subjects that engaged the attention of men. We are here to-day to do honor to one who did more than any other living member of this Society to make effective, to make glorious, the labors upon which we are engaged, and in doing so we draw to ourselves the helpful thought that it has been done of us; that it belongs to us; it is a part and parcel of the labor that we have been engaged in, and we are thankful that so grand a personality could have accomplished the great purpose which this man did. It is not worth while to go back over the ground covered by the various discussions which sprang up in reference to the way to handle this particular malady. It is only worth while for us to bear in mind that there comes an occasion in every man's life when it is necessary for him to face perhaps the unknown. Our profession, our calling, has one great thing in its favor, and that is it is a mine of work from which can be extracted great rewards by those who have the courage, by those who have the education, by those who have the persistence to follow it up. Now, when, therefore, we come to contemplate the work that has been accomplished by our Fellows, we can only find in it a stimulus to go forward and do the work as well. Mark you, "as well."

When I come to an occasion of this kind; when I find moral

excellence reaching the plane it has in the person of this man, I feel that I would be recreant to this Society; I would be recreant to this opportunity if I did not say to you and prove to you, as it can be readily done, that out of truth, out of honesty, as well as out of courage, comes the success in this life which enables its possessor to look squarely in the face, not only pleasures, but all of the evils which may possibly befall us. If any greater prize can come to a human being than that, I fail to know it.

DR. HENRY J. GARRIGUES, in response, said:

The younger members of this Society will doubtless have been much surprised when they saw in the program of this meeting that there would be "a special oration to me in appreciation of my work in introducing asepsis into obstetric practice." They will have asked themselves: "What has that man done to deserve so distinguished an honor?" What little merit I may have in this connection lies so far back that a whole generation of physicians has had time to be born, graduate, and practice obstetrics. They have not known any other conditions surrounding child-bearing than the blessings of antiseptic and aseptic midwifery, to which, perhaps, they owe their very existence. They can hardly form any idea of the difficulties with which we had to contend before their time.

Dr. Wells has entered so fully and accurately into the description of what the new treatment consisted which I introduced in Maternity Hospital that it would be superfluous to say more on that subject. I shall only add that as soon as I had reported its nature and effect to the Medical Society of the County of New York it was adopted by our late fellow members, Dr. Wm. T. Lusk in the Emergency Hospital in New York and Dr. Wm. L. Richardson in the Lying-in Hospital in Boston, and they, obtaining similar results, the new treatment spread rapidly over the whole country.

Fellow members of the American Gynecological Society, I ask you to accept my heartfelt thanks for your great kindness in commemorating my work at the Maternity Hospital, and I thank especially Dr. Wells for having brought up this subject and the other members of the Society who joined him with their remarks.

Thirty-two years have elapsed since I landed as an unknown foreigner on these shores. That I was admitted to your scientific societies and placed in a position where it became possible for me to contribute to the reform of American obstetrics I owe largely to members of this Society who are no longer in our midst. I seize this occasion to gratefully recognize what Marion Sims, Emil Noeggerath, Theodore Gaillard Thomas, Fordyce Barker, Paul F. Mundé, and James R. Chadwick did to smooth the way for the newcomer.

The morning of the third day was devoted to a *combined meeting of the American Gynecological Society with the American Association of Genitourinary Surgeons*.

DR. GEORGE S. HUNTINGTON of New York made some remarks on congenital variations of the kidneys and ureters in reference to their development and surgical importance. His remarks were illustrated by numerous lantern slides.

DR. LEWIS GREGORY COLE of New York discussed the radiographic diagnosis of renal lesions, his remarks being accompanied with admirable plates illustrated by lantern slides.

DR. CHARLES H. CHETWOOD of New York showed specimens and colored drawings illustrating

SURGICAL CONDITIONS OF THE KIDNEY.*

DR. FRANCIS S. WATSON of Boston made some remarks on calculous anuria, with special reference to bilateral renal calculus, and to the simultaneous performance of bilateral nephrolithotomy in those cases, and to calculous anuria occurring in patients having but one kidney.

DR. HOWARD A. KELLY of Baltimore pointed out the value and method of mensuration in vesical, ureteral, and renal work.

DR. GEORGE E. BREWER of New York considered the pathology, diagnosis, and treatment of acute unilateral septic infarcts of the kidney.

DR. GEORGES M. EDEBOHLS of New York followed with a paper entitled

SOME REQUIREMENTS OF UP-TO-DATE NEPHRECTOMY.

EXPLORATION AND DECAPSULATION OF THE OTHER KIDNEY BEFORE COMPLETING A NEPHRECTOMY.

DR. GEORGE M. EDEBOHLS of New York said the routine procedure which he had practiced in all his nephrectomies for the past ten years or more consisted in cutting down on and thoroughly exploring the kidney that might require removal. A vital and essential part of such exploration consisted in not disturbing in any way the vital connections of the organ at its root, the renal vessels, and ureter. Should such exploration of the kidney confirm the necessity and indication for its removal, the kidney was for the present replaced and a second lumbar incision, for exploration of the other kidney, was made on the opposite side of the body. If the second kidney were found in good condition, or in condition sufficiently good to sustain life, it was replaced and the second wound closed. Returning now to the first incision, the diseased kidney was delivered and removed. Should exploration, on the other hand, show advanced disease of the second kidney, or that nothing would be gained by the removal of either kidney, then both kidneys were replaced in the body, either closing both wounds or treating either or both kidneys by such conservative

* See original article, page 44.

measures—decapsulation, nephrotomy, resection, drainage, etc.—as may be indicated under the circumstances.

The second lumbar incision for exploration of the other kidney had three distinct purposes. In the first place it gave absolutely positive information as to the existence or non-existence of a second kidney. In the next place it enabled the surgeon to determine the condition of that kidney; and, lastly, it placed him in a position to decapsulate the remaining kidney.

The existence of a second kidney was of vital importance in nephrectomy. A number of cases were on record in which a patient's only kidney was removed, with the inevitable result. In addition to the recorded cases, a number of unpublished cases may be assumed to exist. He had personal knowledge of at least three such: and it must be stated emphatically that no method of examination at our command, short of exploratory incision, could give absolute and indisputable certainty of the existence of the two kidneys. Even catheterization of both ureters might deceive on this point.

He had operated in all on three patients possessing, as determined by cutting exploration, but one kidney each. In two of the cases the operation contemplated was not nephrectomy, and these two patients were therefore safe from the possible disaster of removal of their only kidney. Not so with the third patient, whose life was spared by virtue of the second exploratory incision, and whose history he briefly outlined as follows:

CASE.—N. J., a married woman, aged twenty-five, came under his care in November, 1902, with pyuria, febrile attacks, and a tumor in the right flank diagnosed as hydronephrosis affecting a movable right kidney. Cystoscopy showed two ureteral orifices presenting no marked differences in appearance. On account of the pyuria catheterization of the ureters was not performed at this examination from dread of possibly infecting the presumably healthy left kidney.

Fixation of the loose hydronephrotic right kidney, performed on November 10, 1902, afforded but temporary relief. Nephrotomy was next tried on January 5, 1903; a large quantity of pus was evacuated and continued drainage was established. About 720 c.c. of urine drained away daily through the lumbar wound, while about 480 c.c. were passed daily per urethram. The latter amount was assumed—incorrectly, as was proven later—to come from the left kidney.

With the closing of the wound the old symptoms returned and, with the concurrence of a consultant, nephrectomy was considered indicated and was done on January 19, 1903. The right kidney was fully exposed and freed from its connections except at the root, where the renal vessels and ureter were left intact. The kidney being temporarily replaced, a second incision was made over the left lumbar region. Search high and low was made, the peritoneum being freely incised for drainage, which was

maintained for some six weeks, at the end of which time the wound closed spontaneously and permanently. With the exception of a very moderate amount of pus in the urine, the patient was well to-day, more than four years after the operation.

The existence of two ureteral orifices with but one kidney seemed to call for explanation and certainly piqued curiosity. Catheterization of both ureters was performed some time after the operation, when the patient was again up and about. The right catheter passed freely up the right ureter to the kidney and yielded urine identical in composition with that obtained from the bladder. The left ureter was pervious to the catheter for some twenty centimeters, at which point the further progress of the instrument was arrested. Not a drop of urine came from the catheter, although the latter was allowed to remain some twenty minutes.

The case, therefore, was one of absence of the left kidney and the upper end of the left ureter, with the presence of twenty centimeters of the bladder end of the left ureter. Were the absence of the left kidney not established beyond question, arrest of the ureteral catheter at twenty centimeters from the bladder might be mistakenly interpreted as due to stricture of the ureter at that point, and not as demonstrating the absence of the corresponding kidney. In a similar manner, catheterization of both ureters in a case of solitary kidney with two ureters would fail to demonstrate the absence of one kidney. For any surgeon, therefore, depending on any and all means, short of direct cutting exploration, for determining the presence of two kidneys, the fatal mistake of removing a patient's only kidney was still among the possibilities.

Inspection and palpation, aided on rare occasions by exploratory puncture, of a kidney at the bottom of an incision, or, better still, when delivered into the wound, would enable all but the veriest tyro to determine the presence or absence of gross lesions, such as tuberculosis, abscesses, stones, and tumors. If both kidneys be found affected with tuberculosis, advanced purulent degeneration, or tumor, nothing would be gained by removing either kidney, and a nephrectomy possibly contemplated at the beginning of an operation should be abandoned. If stones be found in both kidneys it was usually the best procedure to remove the stones from both organs, draining or not, as may be indicated.

A different situation arose when it came to the recognition of the finer structural changes which might affect a kidney. But even here it was mainly a question of the extent and degree of such changes, and these, he maintained, could be readily appreciated after some experience in the examination of kidneys during life. It was not difficult—nay, it was very easy—to recognize advanced fatty and waxy degenerations, interstitial, and other varieties of nephritis without the requirements demanded by the pathologist of splitting the kidney from end to end and through

its entire thickness. If aid akin to this be needed, the surgeon might remove a small piece of kidney tissue, examination of a frozen section of which could be made on the spot in a few minutes by a competent pathologist. Pending the decision of the pathologist, the surgeon might occupy himself with attention to necessary details of operation.

Two good and sufficient reasons for exploration of the other kidney in contemplated nephrectomy had been advanced and discussed. A third reason or indication for exposure of the remaining kidney in nephrectomy had, within a more recent period, arisen in his practice. He referred to decapsulation of the remaining kidney for the purpose of preventing or lessening the liability to death from renal insufficiency, the so-called renal death. As one result of his work in the surgical treatment of nephritis, he had learned that two effects of renal decapsulation might be regarded as practically invariable and constant. *First*, renal decapsulation invariably and at once increased the daily urea output of the kidney or kidneys; and, *second*, renal decapsulation enabled any kidney to do the best work possible for that particular kidney to perform. Both these results acted directly to prevent a renal death. He had had no renal deaths in his nephrectomies of the past seven years, during which he had consistently practiced decapsulation of the remaining kidney.

There could be but two possible objections advanced to the routine practice of exploration and decapsulation of the remaining kidney when performing nephrectomy, one objection partly including the other. These are increased risk to life and undue length of time required for operation. As regards increased risk to life, the objection was not valid; for it was to prevent deaths due to absence of a second kidney, due to want of knowledge of its condition, and due to its inability to maintain life that exploration and decapsulation of the remaining kidney were advocated.

Operations on both kidneys at one sitting were no longer uncommon. His personal experience in renal surgery embraced 688 operations performed on one or both kidneys of 460 patients. In 232 of these patients only one kidney was operated; in 228 patients operation was performed on both kidneys at one and the same sitting. In the earlier years of his surgical career simultaneous operation on both kidneys was the exception; in later years it had become almost the rule.

With good technique and proper posturing and handling of the patient during operation exploration and decapsulation of the remaining kidney should not add more than from ten to twenty minutes to the time required for a nephrectomy. The disadvantages of a slightly prolonged operation were more than counterbalanced by the vital advantages gained for the patient in other directions.

Lastly, the author advanced the proposition that no nephrec-

tony should be completed without examination and decapsulation of the remaining kidney.

The afternoon of the third day was a combined meeting of the American Gynecological Society with the American Ophthalmological Society for the purpose of discussing the prophylactic and curative treatment of ophthalmia neonatorum.

THE PROPHYLACTIC AND CURATIVE TREATMENT OF OPIITHALMIA
NEONATORUM ; WHAT SILVER SALTS SHOULD BE USED AND
WHAT STRENGTH.

DR. EDWIN B. CRAGIN of New York said that one of the burning questions of the day was how to reduce the number of those who go through life handicapped in the race, or perhaps a burden on the State, on account of an impairment or loss of vision, the result of ophthalmia neonatorum. The solution of this problem concerned the treatment of the baby's eyes immediately following its birth, and as various methods of treatment had been used by the writer in his service at the Sloane Maternity Hospital, and as each method had been followed in a series of one or more thousand confinements, the comparisons of the results of the different methods was of interest.

Before taking up the individual methods of treatment, the writer noted the following general propositions:

"1. A baby which is premature and of low vitality is more liable to ophthalmia than one which is mature and vigorous.

"2. On account of the dangers of contagion, babies congregated in a hospital are more liable to ophthalmia than babies under the same treatment and under the same obstetrician in private practice.

"3. The number of cases of ophthalmia in hospital service will vary somewhat with the class of cases admitted, but whatever the treatment employed, judging from the author's experience, a certain number of cases of ophthalmia will inevitably occur."

In the five methods of prophylactic treatment used by him at the Sloane Maternity, the smallest number of cases of ophthalmia in one thousand confinements had been seventeen, the largest thirty-four. Hence, with the present known methods of prophylaxis, in a hospital service of fifteen hundred confinements per year, in which emergency and ambulance cases were received, one must expect from fifteen to twenty-five cases of ophthalmia in each one thousand confinements.

By ophthalmia is meant a purulent conjunctivitis. The objects desired were, *first*, to reduce the number of cases, and, *second*, to have the disease as mild as possible when it occurred.

In cleansing the eye it was his custom to flush the eye from the inner to the outer canthus with boric acid solution by means of a medicine dropper; the outer surface of the lids being then bathed in the same direction with the same solution.

During the last seven years the writer had used a prophylactic measure in five different series of cases, five different silver solutions: nitrate of silver, 2 per cent.; nitrate of silver, 1 per cent.; protargol, 5 per cent.; argyrol, 10 per cent.; argyrol, 20 per cent.

The results were as follows:

Series 1.—In 1,000 confinements, 2 per cent. nitrate of silver solution; cases of ophthalmia, 18; eyes lost, none; opacities, none.

Series 2.—In 1,000 confinements, 1 per cent. nitrate of silver solution; cases of ophthalmia, 34; eyes lost, 1; opacities, none.

Series 3.—In 2,000 confinements, 5 per cent. protargol solution; cases of ophthalmia, 53; average per thousand, 26+; eyes lost, 1; opacities, 1.

Series 4.—In 2,000 confinements, 10 per cent. argyrol solution; cases of ophthalmia, 34; average per thousand, 17; eyes lost, 1; opacities, 2.

Series 5.—In 2,000 confinements, 20 per cent. argyrol solution; cases of ophthalmia, 54; average per thousand, 21+; eyes lost, none; opacities, none.

During the use of the two per cent. nitrate of silver solution, the irritation of the eyes with the accompanying edema and discharge, the so-called silver catarrh, was so great that not only did it occupy a great deal of the time of the nurses in applying compresses and irrigating the eyes of babies, but it seemed to him to be a source of danger not only by leaving an irritated eye which might later become infected, but also by causing in the nurseries discharging eyes, from which the discharge might be carried by nurses to healthy eyes, and thus the infection produced. For this reason, although no eyes were lost in this series, and as far as known no opacities produced, the strength of the nitrate of silver solution was reduced from two per cent. to one per cent.

The original cost of the argyrol solution was much greater than that of the nitrate of silver solution, but when one considered the greater staining and injury to towels, sheets, etc., and the greater demand upon the nurses in the use of the solutions of nitrate of silver, it had seemed to the writer that, viewed at the end of a year, the tax upon the treasury of the hospital from the use of argyrol was but little if any greater than from the use of nitrate of silver.

The author detailed a series of very careful investigations concerning the bactericidal power of silver salts used in the different series. The tests were made with the *Staphylococcus pyogenes aureus*, the *Streptococcus pyogenes*, and the gonococcus.

From the tests made it was evident that in the solutions usually employed argyrol had practically no bactericidal powers over the streptococcus or staphylococcus, but with the gonococcus in strengths of 20 per cent. and 30 per cent. it was perfectly efficient.

So long as a 20 per cent. argyrol solution was efficiently bactericidal with the gonococcus in thirty seconds, so long as the

gonococcus was the coccus most feared in the etiology of ophthalmia neonatorum; and so long as the clinical results were practically as good as with the use of two per cent. nitrate of silver and better than with the one per cent. nitrate of silver, and this without the annoyances of silver irritation and staining, the writer felt justified in using and advocating the use of argyrol as a prophylactic against ophthalmia neonatorum.

In the curative treatment of ophthalmia neonatorum, the writer had also found argyrol of great value. The absence of irritation in strong solutions, the fact that these solutions might be dropped into the eye at short intervals by the nurse without injury to the eye, and the fact that these solutions were bactericidal to the gonococcus, were all in its favor, the writer's present plan of treatment consisted of frequent irrigations of the eye with boric acid solution (every fifteen to twenty-five minutes during the stage of active purulent discharge), cold compresses, and the instillation of argyrol, 30 per cent., every two to four hours.

Since the completion of the bactericidal tests referred to, the writer felt that in spite of its many good qualities argyrol left much to be desired in the treatment of ophthalmia when due to the streptococcus or staphylococcus. It was well known that some of the worst cases of ophthalmia were due to streptococcus infection, and it was hoped that in the near future a silver compound would be found which would possess the blandness of argyrol and be as germicidal to the streptococcus and the staphylococcus as was argyrol to the gonococcus. In the meantime it would seem wise in severe cases of ophthalmia neonatorum, which resisted the treatment by argyrol, boric irrigations, and cold compresses to make occasional use of nitrate of silver, one to two per cent. solutions. The use of all silver compounds, even argyrol, may be continued too long, and the discontinuance of the silver solution with the use of boric irrigations might bring about a speedy recovery.

OPHTHALMIA OF THE NEWLY BORN.

DR. JAMES CLIFTON EDGAR of New York said that the most important of the causes of blindness with which the obstetrician had to do was that resulting from an infection of the eyes of the child at birth. It was important (1) because it was the most common cause of blindness; (2) because it affected the young child and a long lifetime of blindness might follow, and (3) because it was preventable and curable in practically every case receiving proper care, and one of the most dangerous maladies to vision when treatment was neglected or delayed.

As this disease occurred in about 0.5 of one per cent. or one in 200 of all births, and as the total number of births registered for 1906 in New York was 183,012, the frightful prevalence of the disease could be readily estimated.

He sent out a large number of circular letters relative to the

prophylactic use of silver nitrate in these cases. The number of physicians replying was 113. Of these 103 thought that a solution of nitrate of silver was the most effective drug for the prevention of this disease, as well as the most inexpensive. In view of the fact that a two per cent. solution occasionally caused silver catarrh, and that a one per cent. rarely did, ninety-four thought it safer and better to select this percentage for recommendation.

Seven physicians preferred argyrol and protargol in solutions from five to twenty-five per cent. Four preferred a boracic solution; one announced himself in favor of sterile water, and one other used saline. Still another preferred boric or salt, but thought it dangerous to teach to medical students and the general profession. Four physicians thought that the choice of method should be left to the doctor in charge of the case. Three would make it compulsory for almshouses, hospitals, and dispensaries, but not for private cases. The two per cent. silver nitrate solution was preferred by three. One put himself on record as saying that he did not consider silver nitrate a prophylactic in all cases; another asserted that the vaginal canal always contained bacteria.

The conclusions from a study of the replies made it certain that silver nitrate in one per cent. solution was preferred by obstetricians in the United States who were in a position to judge of the merits of the various measures employed. The author's faith in the prophylactic power of the nitrate of silver method was so strong that he attributed all apparent negative or ill-effects of the method to the presence of antepartum infection of the eyes, to unskilled application, or to improper or inert solutions.

The following characteristics were thought to be essential to the proper solution:

1. The solution must be one which is germicidal to the gonococcus.

2. The technique of its application must be so simple that in the hands of the most careless or inexperienced student or midwife no harm can be done.

3. The solution must be of such strength that while it will prevent ophthalmia neonatorum, it will not cause silver catarrh.

4. The solution must be stored in such a receptacle as to preserve its strength and permit of its being placed in the eyes of the newly-born without possibility of mechanical injury.

From a series of experiments which the author detailed, it would appear that silver nitrate in 0.5 per cent. strength or stronger was quickly germicidal to the gonococcus.

The author's conclusions were:

- "1. That silver nitrate solution of 0.5 per cent. strength, when applied to the gonococcus for fifteen seconds or longer, is germicidal to that organism. Therefore, any solution of equal strength or stronger would fill the requirements so far as germicidal power is concerned.

"2. That the technique of administration consists simply of instilling the solution into the eye, requiring no after-neutralization.

"3. That solutions of silver nitrate of 0.5 per cent. and 1.0 per cent. strength did not produce a silver catarrh, even though no neutralizing solution was used afterward. That solution of 2 per cent. silver nitrate produced a silver catarrh in about 25 per cent. of cases, whether or not a neutralizing solution was used. Therefore, a 1.0 per cent. solution, being germicidal and at the same time producing no silver catarrh, is recommended.

"4. That some convenient receptacle should be used."

THE PRESENT STATUS OF THE QUESTION OF TREATMENT OF OPH-
THALMIA NEONATORUM FROM THE STANDPOINT OF THE
OPHTHALMOLOGIST.

DR. LUCIEN HOWE of Buffalo said that in considering this subject we should keep in mind three distinct phases of it, namely, as it affected the physician, the midwife, and the public. He dealt briefly with the two latter classes. As far as the physician was concerned, he thought he could lay down this as a proposition, that it was impolitic, at least, to attempt to coerce physicians by legislation or otherwise, and what should be done was to educate them. The question was *how* to educate them. It was a part of the duty of the ophthalmologist to educate the medical student. He was not given a sufficiently clear idea of the importance of ophthalmia neonatorum. A second point which should be impressed was that the percentage of blind from ophthalmia neonatorum from infancy was greater in the rural districts, and not in the cities where one would expect it. Another thing, it should be taught that silver nitrate in two per cent. solution was the one on which physicians as obstetricians and as ophthalmologists must depend.

DR. LAPHORN SMITH of Montreal remarked that his total obstetric experience comprised a little over fifteen hundred cases. He had had a little less than ten cases of suppuration of the eyes. His plan was this: he did nothing unless there was some reason for so doing. When there was any sign of ophthalmia neonatorum, he began with a one per cent. solution of silver nitrate, and if in two days there was no improvement he would use two per cent., and in this way he cured the cases promptly. Two or three times a day he would give a drop or two of the solution himself unless there was a good nurse to whom he could entrust this work. He had lost no eyes, and there were no opacities. He thought a two per cent. solution of silver nitrate was good enough.

DR. WALTER P. MANTON of Detroit, Mich., said that Credé, in his last series of cases, published in a monograph in 1884, practically had no cases of ophthalmia neonatorum in the institute in Leipzig. Much had been said in regard to silver reaction or silver catarrh that was produced. He was with Credé during the

conduct of some of his experiments, and he saw cases of silver catarrh. They had been using nitrate of silver in the Detroit Woman's Hospital for many years in two per cent. solution, and they rarely ever got any silver reaction or catarrh reaction. He agreed with Dr. Cragin that men practicing among the upper classes almost never saw a case of ophthalmia neonatorum. The speaker had never had a case in his own practice. They had not had the same success from the use of argyrol as had been reported in other institutions.

DR. F. PARK LEWIS of Buffalo, N. Y., said it had been clearly demonstrated that in the practices of such men as were present, whether they be obstetricians or ophthalmologists, blindness followed gonococcic infection so rarely as to be practically a negligible quantity, whether the preparation used was a one or two per cent. nitrate of silver or organic silver salts. A large proportion of these cases, when properly treated, were not followed by blindness. It was essential to discriminate between prophylaxis and treatment. The intelligent physician could treat ophthalmia neonatorum and cure it. Provision should be made for the education of midwives, for frequently they were not only inexpert, but filthy. The efforts of physicians, therefore, should be directed, *first*, toward the ignorant midwife and the indifferent physician in regard to prophylaxis, and when this was done the question of treatment would take care of itself.

DR. WALTER M. GREEN of Boston said that in the Boston Lying-In Hospital they followed practically the same plan and used the same solutions as those mentioned by Dr. Cragin. They had tried one and two per cent. silver nitrate; also protargol and argyrol, and at present were using twenty-five per cent. argyrol. While he was not armed with statistics, he could say they had had better results with argyrol than with silver nitrate.

DR. HENRY D. FRY of Washington, D. C., said in the maternity with which he was connected in Washington, where they have used regularly a two per cent. solution of nitrate of silver, it effectually controlled the situation. There had been no eyes lost. Sometimes ophthalmia developed, but the cases were turned over to an ophthalmologist, who cured them. For some time they had been using a one per cent. nitrate of silver solution, but after hearing the results of Dr. Cragin he thought he would return to the two per cent. solution.

DR. ALVIN A. HUBBEL of Buffalo, N. Y., said that as a prophylactic measure, nitrate of silver solution had been demonstrated beyond question to be efficient. A one per cent. solution was favored by some; a two per cent. solution was favored by more. He believed a two per cent. solution was right. This solution should not be dropped carelessly and freely into the eye as a preventive, or as a curative, measure, but should be given with great care. Credé's method was to instill between the edges of the lids about half a drop. He directed that a glass rod be used, not a medicine dropper.

The subject was further discussed by Drs. Seth C. Gordon of Portland, Me.; Dr. Taylor of Philadelphia, and the discussion was closed by Dr. Cragin.

CYSTIC LYMPHANGIOMA OF THE GASTROCOLIC OMENTUM.

DR. W. FRANCIS B. WAKEFIELD of San Francisco, Cal., referred to the sparsity of literature on this subject, and said the tumor in the case he wished to report presented a very rare type.

The details furnished by his own case were these:

A four-year-old boy was brought to Dr. S. J. Hunkin with an abnormally distended abdomen. He presented no other symptoms. For at least two years the child's abdomen had been noticed to be progressively increasing in size. Laparotomy was advised; Dr. Wakefield was asked to operate, and saw the child, for the first time, on the operating table.

Abdominal section disclosed a multiple cystoma, larger than an adult head, which was broadly attached to the greater curvature of the stomach, spreading out over a small portion of the anterior and a greater portion of the posterior wall. Its attachment to the stomach was so firm that it could not be separated therefrom without danger of injuring that viscus, and it was therefore cut away as close as possible to the stomach wall. No gross pathological change could be observed in the wall of the stomach, the cystoma having simply plastered itself over its surface.

The leaf of the gastrocolic omentum which passes from the stomach to the transverse colon was absent, though the ordinary omental apron spread itself downward from the transverse colon over the small intestines. It seemed very clear, then, after the tumor had been delivered through the abdominal incision and he found himself able to look directly down upon the pancreas, that he was dealing with a cystic tumor originating in and displacing the upper reflection of the gastrocolic omentum, and that the tumor early in its career, as it developed between the omental folds, had, by simple contiguity, spread itself over and became attached to a somewhat broad area of the stomach wall. A small cystic mass, about the size of a hen's egg, was found loosely attached to the head of the pancreas, and a still smaller one, about the size of an English walnut, was found attached to the serous coat of the stomach, some distance from the main tumor.

Subsequent study of the specimen developed the following details:

The tumor was larger than a man's head and consisted of a number of various sized, thin, and clear-walled cyst chambers. The central portion of the neoplasm was occupied by a single cavity which made up the bulk of the cystic mass. Surrounding this central cavity on all sides were numerous smaller cystoid masses ranging in size from that of an orange to that of a pea. The walls of all the cyst chambers were thin, easily ruptured, smooth, shiny, and in general appearance resembled the omentum. The component layers of the cyst walls could not be

separated. The inner walls of the cyst cavities were in many places covered by somewhat adherent gelatinous masses, which to the feel were distinctly granular.

The fluid contained within the cavities of the cystoma was clear, straw-colored, neutral in reaction to litmus, and coagulated into a solid mass on heating with a drop of acetic acid. In some of the chambers the fluid was mixed with fine crystals, oily to the touch, and microscopically identical with cholesterol. In others the presence of blood was indicated, macroscopically by imparting a dark color to the fluid, and microscopically by the presence of red cells. The cystic fluid everywhere contained leucocytes.

Histological examination of the walls of the cystoma showed them to be made up of a large number of various sized cavities, held together by a tissue consisting entirely of mesoblastic structures. The cavities were in part empty, in part filled with a homogeneous, pink-staining material that became granular in character where it approached the walls of the cysts. The cysts showed at times a lining of flat epithelial-like cells. For the most part the wall of the cysts was made up of different sized and branching giant cells. These giant cells showed everywhere slit-like clefts having the shape of cholesterol crystals. The supporting structure between the cysts was made up of loose connective tissue containing blood vessels of various sizes, collections of small round cells, some flat cells, and in places what seemed to be involuntary muscle fibers. Scattered throughout the specimen were isolated polymorphonuclear leucocytes.

A consideration of the above data makes imperative a diagnosis of cystic lymphangioma, yet this tumor ordinarily would have been reported simply as a cyst and would have received no further consideration or study. Thus, in particular, the opportunity to develop the real nature of this neoplasm would have been lost, and in general knowledge of omental cystomas would be no fuller than heretofore.

In only one instance, as far as the author could find, was he presented with enough data to enable him to draw efficient conclusions as to the probable real nature of these tumors. The rest of the literature on the subject was simply of numerical value. He was strongly of the opinion that a large proportion, perhaps all, of these cystomas were, in fact, cystic lymphangiomas. In substantiation of this opinion he offered three considerations. First, a general belief in the lymphatic origin of omental and mesenteric cystomas was consistent with what might be expected of tumors proliferating from structures possessing the anatomical and histological characteristics and physiological function of these tissues. Secondly, it was more rational to presuppose the development of new lymph structures from an angioblastic matrix than to assume an aberration of cells from the primordial ovules of the Wolffian bodies. Third, a critical study of the reported cases shows that, with few exceptions, there was nothing to contraindicate the

possibility of their having been lymphangiomas, while the only case reported with histological detail was evidently a lymphangioma, though not recognized as such.

The case to which he had just referred was a cystoma of the omentum operated upon by Spencer Wells and subsequently examined and reported by Ransom.

DR. HUNTER ROBB of Cleveland, Ohio, presented a paper on

ECTOPIC GESTATION WITH SPECIAL REFERENCE TO THE TREATMENT OF TUBAL RUPTURE.*

DR. J. MONTGOMERY BALDY of Philadelphia said the teaching of the essayist was so dangerous that he could not refrain from saying a few words. The essayist had remarked that these patients did not bleed to death. Dr. Baldy said that plenty of them bled to death, and in support of this statement mentioned the report of Formad (Coroner's Physician of Philadelphia at one time), who put on record some fifteen or twenty cases of patients with ruptured ectopic gestation that bled to death, the abdomen having been found filled with blood. The speaker favored early operation in cases of ectopic gestation.

DR. C. C. FREDERICK of Buffalo, N. Y., had seen from seventy-five to one hundred cases of extrauterine pregnancy. Of this number five had died from acute hemorrhage. In three he opened the abdomen and endeavored to save the patients' lives, but every one of the five was almost pulseless at the time of the operation. In the three in which he opened the abdomen the patients were too far gone, and died. Of the others, in which the hemorrhages were slow, he lost only two out of between fifty and sixty cases. He believed that the cause of death in these rapidly acute cases was largely due to the loss of blood, and it was not a matter of shock. He did not see why these cases should have more shock than those that did not die from shock. He thought that by estimating the amount of hemoglobin in each individual case we could determine whether it was shock or hemorrhage that the patient was suffering from. If the patient was suffering from shock, the hemoglobin index was going to be high, say sixty or seventy per cent.; whereas if the index dropped to thirty or thirty-five per cent., the patient was suffering from hemorrhage.

DR. PHILANDER A. HARRIS of Paterson, N. J., related some cases of ruptured ectopic gestation operated on late, but which he believed could have been saved by early operation.

DR. I. S. STONE of Washington, D. C., thought we were taking a step backward by advocating delay in cases of ruptured ectopic pregnancy. When a patient was bleeding, it was a good principle to operate with a view to arresting the hemorrhage. He favored early operation, and said that not long since he lost a case of

* See original article, page 6.

ectopic gestation from hemorrhage, the abdomen being found filled with blood.

DR. WILLIAM E. MOSELEY of Baltimore exhibited a couple of specimens in connection with this discussion. The cases were interesting on account of their rarity in certain respects. The first one showed the possibility of secondary rupture of the tube. In this particular case there was a tubal abortion, and nearly ten days after the tubal abortion occurred there was secondary hemorrhage from rupture of the sac. He operated on the woman two and a half hours after there were indications of rupture, and the patient was now doing well.

The other case was one of ruptured interstitial pregnancy of possibly three months' duration.

DR. ROBB, in closing the discussion, said that he had simply presented an abstract of his paper, consequently he had been misunderstood. The paper, when read in full, would answer many of the objections that had been raised better than he could do in the few minutes allotted to him.

INCISION OF THE ANTERIOR UTERINE WALL (ANTERIOR COLPOHYSTEROTOMY) AS A TREATMENT OF CHRONIC INVERSION OF THE UTERUS.

DR. REUBEN PETERSON of Ann Arbor, Mich., said it had been his good fortune to operate upon two cases of chronic uterine inversion. A full description of the first case, an inversion of sixteen months' standing, was published in *American Gynecology*, for June, 1903. In this same paper the literature of the conservative operative treatment of chronic uterine inversion was brought up to date, and a plea made for the superiority of complete anterior colpo hysterotomy (Spinelli's operation) as the ideal operative procedure.

His second operation for chronic inversion of the uterus occurred in 1904. In reporting this case he carefully reviewed the literature and tabulated some seventy cases operated upon by various methods.

In his former paper he referred to a patient whom he saw in consultation with Dr. G. K. Johnson of Grand Rapids, Mich., in 1902. The patient at that time was twenty-two years of age, and the inversion of the uterus followed the birth of her first child. For three or four weeks following the labor she flowed profusely, but the true condition of affairs was not discovered until Dr. Johnson's examination. He saw the patient in consultation some two months after the accident. Several ineffectual attempts were made under anesthesia to reduce the inversion by taxis, but every effort was futile. Elastic pressure applied to a cup-shaped repositor was also a failure. The Thomas operation was proposed, but was not accepted, and the patient passed out of his hands. After the publication of his paper on

chronic inversion of the uterus, in which he reported a case of sixteen months' standing successfully treated by anterior colpohysterotomy, Dr. Johnson wrote him that the patient they had treated twelve years before was still under his charge, and that he had advised her to be operated upon for the inversion, which caused her to lose large quantities of blood at intervals during each month. Accordingly, the patient entered the gynecological service of the University of Michigan Hospital June 27, 1904. The patient was then thirty-four years old, and had been a widow five years. There had been no attempts at replacement of the inversion since operation was refused in August, 1892. For a long time thereafter she was weak from loss of blood, but gradually regained her strength, so that she was able to do her housework.

Examination, soon after entrance, showed marked external and internal tears of the perineum, with great relaxation of the vaginal outlet. The inverted uterus filled nearly the entire vagina. The exposed mucous membrane was smooth and bled easily on handling. The finger could be passed between the tightly constricted cervical ring and the uterus, showing that the cervix was not entirely inverted. The finger could easily be inserted into the cervical ring by pressure on the abdominal wall.

Operation, July 1, 1904, twelve and one-half years after the labor from which the inversion resulted. Careful sterilization of vagina and uterus. The inverted uterus was drawn down, and an incision made in the anterior cervical lip, 3 c.c. in length, down to, but not through, the peritoneum. The attempt to reduce the inversion following this incision proved futile. A transverse incision 5 c.c. in length was now made just above the edge of the anterior cervical lip, and the vesico-uterine pouch opened. The longitudinal incision in the ring was now deepened through the peritoneum, and lengthened until it extended from the transverse incision to within 2 c.c. of the fundus. Only after incising the anterior uterine wall to this point was it possible to reinvert the uterus. The ovaries lay above the entrance to the ring. Together with the Fallopian tubes they were without adhesions and perfectly normal. After the reinversion was accomplished there was a decided ectropion, or rolling out of the cut edges of the anterior uterine wall, so that it was practically impossible to unite the edges of the serosa. Removal of wedge-shaped pieces from each cut edge obviated this difficulty. The incision was united by a continuous catgut suture, reinforced by a few Lembert sutures. The fundus was returned within the pelvic cavity and the cervix united by a continuous catgut suture. The transverse vaginal incision was united with catgut, except for a small opening for a gauze drain between uterus and bladder. A small wick of gauze was also placed through the external os. The patient made an uninterrupted convalescence. Before she left the hospital the cervix and perineum were repaired.

Examination at the time of her discharge showed the uterus in normal position and movable. Dr. R. R. Smith of Grand Rapids, Mich., examined the patient within a few weeks, and reported the uterus in normal position and quite movable. The patient had no pelvic trouble.

Microscopic Examination.—Microscopic examination of the wedge-shaped pieces removed from the uterine walls showed the following: The exposed surface of the mucosa was covered with organizing blood elements, fibrin, and leucocytes. The tissue was rich in new blood capillaries, with hypertrophy of the endothelial cells. Polynuclear leucocytes were numerous in the mucosa. The glands were practically destroyed. The connective tissue of the stroma was edematous. There was an increase of connective tissue in the submucosa. The muscular layers were more vascular, but did not show the sclerotic changes noted in the case reported in a former paper.

The author subdivided the treatment of chronic uterine inversion into non-cutting procedures, and cutting operations.

Non-operative procedures were not considered in detail, but only incidentally in connection with those calling for the use of the knife. He pointed out the procedures aiming at an enlargement of the constricting ring from above. The reason why manual reduction of chronic inversion of the uterus so often failed was because it was so difficult to force the large uterine body through the small, rigidly contracted cervical ring. To Thomas belonged the credit of first opening the abdominal cavity for the purpose of dilating a constricted cervical ring which had resisted every effort at dilatation from below.

There had been twenty-seven cases of inversion treated by abdominal incision. Of these 20 or 74.07 per cent. were successful as far as reinversion was concerned. Although successful from an operative standpoint, there were four deaths among this number. There were seven operative failures, or 25.9 per cent. All of these patients were operated upon some years ago, and not one of them probably would be a failure to-day. It was not always as easy as it seemed to dilate the ring by the abdominal route. In only thirteen cases out of the twenty-seven was dilatation successful. In ten cases the ring, either on its anterior or posterior surface, and in one case both sides, was incised.

The author then discussed procedures aiming at enlargement of the ring from below, including cervical incisions. He likewise discussed dilatation of the cervical ring through an incision in the uterus. He discussed Küstner's operation; also other methods of operating for inversion of the uterus.

In many cases of chronic inversion the surgeon had to deal with a patient exsanguinated by frequent and profuse hemorrhages from the exposed mucosa. Such anemic patients did far better when the operation was performed from below. He pointed out the superiority of the vaginal over the abdominal incision of the

ring. He likewise emphasized the ease with which adhesions of the appendages could be treated.

Just as he was a firm believer in the advantages of the vaginal over the abdominal method of operating for chronic uterine inversion, so he was a strong advocate for anterior colpohysterotomy, the operation of Spinelli. Still he was free to confess that in reality there was not so much difference whether one should choose the anterior or posterior uterine wall for the incision, provided he was prepared to enlarge it sufficiently, so that all tearing or mangling of the tissue might be avoided during the reinversion. It would not be necessary to make a long incision in all cases of chronic inversion.

There was no danger of wounding the bladder by the anterior incision.

The author then discussed the method of closing the uterine incision; drainage; pregnancy after incision of the uterus, and pointed out that operative procedures were much better than prolonged efforts at reduction by means of taxis.

A STUDY OF THE UTERO-SACRAL LIGAMENTS.

DR. I. S. STONE of Washington, D. C., said he had made careful examinations of most of his gynecological patients during the past year with the intention of ascertaining the availability of the utero-sacral ligaments for suspensory purposes. With the patient in the high pelvis position and the abdomen opened in the median line, he had observed the length of the various ligaments, the mobility of the pelvic peritoneum, and what differences existed between these structures in nulliparæ and similar ones in multiparæ. These observations were intended to supplement those previously made by the early gynecologists, who believed that the lacerations resulting from childbirth were the principal factor in the production of retroversion and prolapse of the uterus. A number of eminent names could be mentioned among those who ignored conditions above the vagina or pelvic floor. They taught us to prevent lacerations, if possible, but if these accidents occurred they must be repaired, which repair, if properly done, would prevent all further trouble. This meant that a repair of the fascia near the vagina, or that which could be reached from the vagina, was amply sufficient. Looking backward over the vast number of useless attempts made by well-meaning operators to improve upon the teaching of immediate predecessors, we could the better appreciate the elements of truth contained in the philosophy of uterine prolapse as taught by them. A few men were now looking at uterine displacements as a feature of or a result of some other disability. He confessed that he was of that number, for he knew that many, perhaps most, of the women with retroversion, whether nulliparæ or multiparæ, had enteroptosis with elongation of the retrouterine peritoneum, including the utero-sacral ligaments.

His study of the subject during the last few years had convinced him that many of the ordinary cases of "version" had their origin in a prolapse of the mesentery. With this prolapse or elongation there was stretching of the fascia and connective tissue supports throughout the pelvis. There was certainly great elongation of the round and broad ligaments, and also the uterosacral ligaments. This was easily demonstrated in young women who were not married and who had not conceived or borne children, as well as in multiparæ. It was apparently true that women with retroversion, who bore children and sustained lacerations during childbirth, fell easily into invalidism from prolapse, without some form of treatment. This, however, failed to negative the statement that the presence of a retroversion of the uterus in either multiparæ or nulliparæ was evidence that the retro-uterine suspensory peritoneal supports were defective. Therefore, he felt convinced that operations upon any special ligament, such as the round ligament, that would cause it to hold more than its allotted share of weight would fail of success, for the reason that an extra amount of weight would be thrown upon such ligaments, and especially so when a displacement had been over-corrected. Gynecologists would agree that descent of the uterus with pointing forward of the cervix depended upon lack of strength in the posterior uterine supports, whatever their character might be. Those believing in the ability of the uterosacral ligaments to furnish this support told us that the fault lay in them. It was at least plausible to assert that the posterior supports gave way first, and that the round ligaments soon became elongated as the uterus inclined backwards. In correcting displacements in his practice, he had seen the temporary benefit of round ligament shortening fail to give permanent relief because the cervix was not held backwards as it should be by the action of the ligaments in question. He had also seen the same defect in the ventro-suspension operations. In these the cervix was seen elevated for a time, or until the suspensory ligament was formed, but the cervix invariably came forward towards the symphysis as freely as before the operation, especially when the patient was in the erect position.

The author described the method of examination by reporting the following case of retroversion occurring in a comparatively healthy nullipara.

L. N., colored, single, nullipara, aged 24. She had not been severely ill at any time, nor had she had the venereal diseases. She had had backache, slight headache, and pain in the pelvis in the region of the left ovary. She had not lost flesh, nor had she any disease of the digestive organs. She had been regular in her menstrual periods, and had not had much, if any, dysmenorrhea, and only had slight leucorrhea. Her right kidney was six centimeters lower than normal. Her stomach was also lower than normal. Her uterus was retroverted. The cervix was pointing

toward the symphysis and the fundus very low in the cul-de-sac of Douglas. The fundus was somewhat enlarged. There were no evidences of other uterine or adnexal disease.

Operation, April 4, 1907. The cervix was caught with a volsellum. The abdomen was opened in the median line. The uterus was drawn out of the abdomen and its internal os was about as high as a horizontal line drawn between the two anterior iliac spines. The uterosacral ligaments were now seen standing out in plain view. The uterus was now held by the fundus and was pressed forward towards the symphysis. Its anterior surface could be made to reach about three centimeters from the symphysis. Finally, the volsellum attached to the cervix was drawn downward until the cervix nearly reached the introitus. With the uterus in this position the uterosacral ligaments were not visible, while the entire retrouterine peritoneum was tense and the pelvic fold of the mesentery was also perceptibly lower than before. The broad and round ligaments were greatly elongated and appeared to share relatively in the changes mentioned above.

In this case, as in a few others, he measured the length of the round ligaments and found them ten centimeters in length, or double the normal. As the cervix could be made to touch the symphysis, it was evident that the posterior ligamentary and peritoneal supports were inadequate as suspensories. The uterosacrals stood out with greater prominence with the uterus pressed against the symphysis, and one could clamp and excise them for further study if desired.

He had a photograph made from a section of one of the ligaments in the case under description. Nearly all of the mass shown was made up of connective tissue, with only one small bundle of fibers about one millimeter in diameter. He took this section from a point four centimeters from the posterior margin of the cervix. A dissection made the same distance from the sacroiliac junction showed nothing to the unaided eye but loose connective tissue. After satisfying himself that the uterosacral ligaments were apparently useless in nulliparæ with retroversion, precisely similar observations were made upon multiparæ.

A patient was selected who had borne four children, and who had a considerable degree of vaginal relaxation with retroversion and descent of the uterus. The patient was a thin, nervous woman, who had the usual backache, headache, and leucorrhea, and was no longer able to attend to her duties as housewife. This woman had never been very ill at any time, and there appeared to be very little evidence of organic disease except the changes incidental to visceral prolapse. Her stomach and right kidney were markedly lower than normal, and there was decided intestinal pressure upon the retroverted fundus and the cul-de-sac, while the patient was standing.

All of the measurements taken showed an additional degree of elongation in the various ligaments. The cervix was easily drawn

outside the introitus, and the whole organ could be removed from the abdomen with less traction than in the previous case. A dissection of the utero-sacrals proved the absence of a perceptible amount of muscular tissue, but the microscope showed a few bundles in the magnified drawing. This patient was a victim of Glenard's disease, and the author confessed to a feeling of helplessness when he was confronted with such a number of slight changes, any one of which was comparatively unimportant, yet in the aggregate might render the patient (if a poor woman) an invalid. Should we begin by shortening the round and utero-sacral ligaments to overcome a retroversion of the uterus, which was merely a part of the trouble, and more a result than a cause of her poor health? Or should we attempt treatment of the enteroptosis and the nephroptosis? These poor, thin, anemic women, who had need of rest and forced feeding and massage, could not be easily cured by the application of a pessary, or any other method of holding the uterus in position, as might be done temporarily, at least, by a ligament operation.

It appeared absolutely impossible to retain the uterus in position by any method of treating the uterosacral ligaments, which will depend upon their muscular strength. It was possible that temporary benefit might be obtained by folding the ligaments themselves, shortening, but when one saw the whole retrouterine peritoneum so loosely attached to the pelvis he should not be very confident of success after the operation. Even with shortening of the round ligaments, which draw the uterus in anteversion, the pressure of the viscera downwards into the cul-de-sac exerted with great force, and he saw no reason why the duplications of the ligaments should not unfold and the cervix descend as before.

Operations had been tried by English operators, having in view a firm attachment of the uterosacral ligaments to the pelvic brim. Jessett attempted to secure the peritoneum with the ligament to the periosteum at that point. His method had not become popular and very few surgeons had tried it. Bishop had also attempted to attach the upper end of the uterosacral ligaments to the pelvis in such a manner as to provide a normal elastic suspensory ligament. He called attention to the frail and attenuated muscular bands which were overstretched in uterine displacements, and which atrophied when torn or otherwise injured.

INVERSION OF THE VAGINA, WITH THE DESCRIPTION OF A PRESUMABLY NEW OPERATION FOR ITS RELIEF OR CURE.

DR. PHILANDER A. HARRIS of Paterson, N. J., employed the term inversion of the vagina to indicate complete prolapse of that organ and the consequent descent of more or less of the pelvic viscera in the hernial sac. Inversion of the vagina could only be said to occur where the uterus or most of it had been removed.

He had encountered three cases of inversion of the vagina, in two of which he performed primary vaginal hysterectomy. The first one was operated on about seven years ago, and had been lost from view.

The second case presented itself to him with complete inversion of the vagina four years after he had removed her uterus by the vaginal route for fibroids. This patient's uterus had not come outside of her body at any time preceding the hysterectomy. She had, however, since the removal of the uterus, consulted another physician, who performed some plastic operation on the vagina for the relief of the inversion, but without any good effect whatever.

For the cure of the inversion of the vagina he operated on her in the Passaic General Hospital, September 4, 1906.

The vagina was first disinfected, then returned to place and so tightly packed with to-and-fro gauze as to distend it. A median line suprapubic incision was then made, the round ligaments found and dissected from their imbedment. A hole was then made at each side of the vagina near its fundus. The right round ligament was threaded through these apertures from right to left, and the left ligament was made to transfix the vagina by threading it through the same apertures from left to right. Each distal end was then drawn taut and sewed to the base of its fellow and also stitched with catgut through the vagina at the points between immergence and emergence. A small perineorrhaphy was then resorted to. When the patient left the hospital the fundus of the vagina was located so high that he could not reach it with the examining finger. Examination of the case three months afterward gave no evidence of prolapse of the bladder, rectum, vaginal walls, or the vagina itself. The woman lived a very considerable distance in the country and he was not able to give a later report than that previously stated.

The second and last case upon which he performed this operation appeared in the charity service of one of the hospitals where he worked, with a history that she had suffered for many years with prolapse of the uterus, and had entered a neighboring hospital, where she underwent the operation of vaginal hysterectomy less than a year before she came under his notice. He found complete inversion of the vagina and submitted for inspection two photographs showing the condition. She was operated from above in the same manner as the other case described, excepting that he denuded the mucous membrane of the vagina at its fundus before transfixing it with the ligaments, and he also purposely omitted the operation of perineorrhaphy in order that he might see the result of the unaided suprapubic work. In this case the vagina was also held high up. There remained, however, a degree of rectocele for which he performed a perineorrhaphy before allowing her to leave the hospital. The immediate results

were entirely satisfactory, but it was too soon to judge of the remote effect of the operation.

Should anyone wish to perform this operation of transfixion of the vagina with the round ligaments, he would suggest the denuding of the mucous membrane at the fundus of the vagina before transfixing it with the round ligaments, as was done in his second operation.

Inversion of the vagina would succeed procidentia uteri in a considerable proportion of all cases in which there was a history of the uterus having come out of the body before the hysterectomy, unless while removing the uterus the stumps of the uterine ligaments were securely fastened in the fundus of the vagina, or to the remaining uterine neck. Anchorage of the uterine ligaments to the fundus of the vagina or to the cervical stump was a very easy matter as a part of the operation of suprapubic hysterectomy in the hands of experienced operators.

It is probably a less easy task to effectually anchor the uterine ligaments to the vagina in infrapubic hysterectomy. In removing the uterus for any purpose by the suprapubic route the stumps of the uterine ligaments should be drawn taut and well anchored to the stump. Anyone who is not reasonably certain of his capability to secure properly the stumps of the uterine ligaments to the uppermost part of the vagina as a part of vaginal hysterectomy should in no instance attempt to remove the uterus by the vaginal route for the cure of procidentia uteri, for the reason that the ultimate effects of a considerable proportion of all such cases would be failures, for the reason that inversion of the vagina would simply supplement the procidentia uteri.

Colpoplexis was doubtless the most effectual method of overcoming inversion of the vagina, but the consequent loss of function constituted an item of very grave importance. The degree of help obtained from the so-called colporrhaphies, including the operation of Le Fort, in which more or less of the mucous membrane of the vagina is removed, constituted procedures from which the amount of relief and the number of cures appeared to depend to a very considerable degree upon the extent of the area of mucosa removed. From the correspondence he had had, he had formed the opinion that the greater the amount of mucous membrane removed the better appeared to be the results, so far as the cure of the inversion was concerned, but so much tissue was removed in certain instances that, although the inversion was cured, the function of the vagina was lost.

The results obtained by a number of surgeons from operations in which the most essential element was a fixation of the bladder to the abdominal wall indicated that just that procedure was of great benefit to these cases. The excellent results reported by two surgeons from suturing the sacrouterine and round ligaments to the fundus of the vagina or to the cervical stump consti-

tuted a surgical procedure which was well worthy of careful imitation.

As to the comparative merits of that operation and his own, in which an equal number of cases were reported with apparently equal results, he had little to say other than that the threading of the round ligaments through the lumen of the vagina, and the preparation of the field and sewing it, as described, struck him as possessing all the merits of the other operation and possibly some additional advantages.

OFFICERS.

The following officers were elected for the ensuing year: *President*, Dr. J. Montgomery Baldy of Philadelphia; *First Vice-President*, Dr. I. S. Stone of Washington, D. C.; *Second Vice-President*, Dr. Malcolm McLean of New York City; *Treasurer*, Dr. Charles P. Noble of Philadelphia; *Secretary*, Dr. J. Riddle Goffe of New York City, reelected; *Member of the Council*, Dr. Clement Cleveland of New York City.

Philadelphia was selected as the place for holding the next annual meeting. Time, fourth Tuesday in May, 1908.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of January 18, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. MILLER reported a case of

LARGE PYONEPHROSIS.

Mrs. R., a patient of Dr. Thos. Lee, was seen by me December 5, 1906. She was 30 years old, moderately well nourished, and, except during her pregnancy a few years ago, had enjoyed fairly good health. During that pregnancy a little over two years ago she had an attack of pyuria, with pain and tenderness in region of left kidney and fever. A diagnosis of a pyonephrosis was made but the symptoms soon cleared up and her confinement and the puerperium were without incident. The physician, Dr. McCormick, reported that the urine became normal. The following

notes were made on December 6: Four days ago she began to complain of severe pain in the left abdomen and under the left ribs. A tumor made its appearance. The urine became cloudy, and on examination contained pus. The tumor would vary considerably in size, but when seen by me December 5 was apparently as large as a man's head, was tense, tender, and appeared to be attached under the left costal margin. The tumor filled the whole left side of the abdominal cavity, causing it to appear considerably larger than the right side. It extended across the middle line, and to the brim of the pelvis. Percussion over it was generally tympanitic, but one could, in places, elicit a flat note. There was no fever, little or no nausea, and no vomiting.

The vaginal examination showed that the tumor, while extending to the brim of the pelvis, was not connected with the uterus.

During the night of December 5 she voided large quantities of purulent urine, and the next morning the tumor was considerably reduced in size, and was not so tense nor so tender to pressure. After irrigating the bladder thoroughly and with the use of cocaine the bladder was examined and the left ureter catheterized. The mucosa of the bladder was slightly reddened but no ulceration was seen. The left ureter was catheterized by the Kelly method, a rather large ureteral catheter being used.

No obstruction was met, and at once there was an outflow of purulent urine. It flowed in a steady stream for one and one-half hours, during which time 30 ounces were collected. The tumor gradually diminished in size and finally could not be felt at all. Two specimens of urine were submitted to Dr. Nichols for examination. One was the urine from the bladder obtained by catheterization immediately before examination; the other was urine from the left kidney. His report is as follows:

	LEFT KIDNEY.	BLADDER.
Amount	180 c.c.	14 c.c.
Sp. gr.	1006	1015
Per cent. urea	1%	1.55%
Sed. by bulk	About 1-300	1-3000
Albumin	Small trace	Smaller trace
Tubercle bacilli	Not found	.....
Sarcinæ	Large number	.....

We kept her in bed a few days, then put on an abdominal support, and since then she has been going round and is very comfortable, and has had no return of tumor or pain. There has never been any elevation of temperature. Under the circumstances what is the proper treatment?

DR. CARR said that the proper treatment he thought would be to let the kidney alone as long as the patient suffers no discomfort from it. If it refills an exploratory operation (extra perito-

neal) should be done to determine the nature of the obstruction, which is probably a calculus. It would hardly be advisable to remove the kidney, as the urinary examination shows that it is doing a considerable amount of work.

DR. THOMAS asked if the wax-tipped bougie had been used to determine if a stone is in the kidney.

DR. BOVEE.—One should determine the cause of the pus and of the obstruction to outflow of urine. A skiagraph should be made to determine the presence of a calculus. It should likewise be ascertained if the kidney is in its proper position. A freely movable kidney with a kink in the ureter could have caused the symptoms, etc. If the kidney is abnormally mobile it is advisable to fix the kidney. If the urine does not clear up a nephrotomy is advisable, with drainage, and then if pus continues the kidney should be removed.

DR. MILLER said that the history of the case with sudden onset of the present symptoms and signs gave him an impression that the trouble may have been due to a kinked ureter. The purulent urine would indicate a chronic pyelitis or suppurative nephritis, possibly tuberculous in character. He thinks the advice given by Dr. Carr and Dr. Bovée good, and will try to determine the cause of the pus and the origin of the attack. The patient is violently opposed to any operative procedure, and for the present he shall have to be content with observation.

DR. VAUGHAN read the paper of the evening,

VOLVULUS OF THE INTESTINE.*

DR. CARR.—The most important practical consideration in connection with the subject is the means of making an early diagnosis. From the fact that the symptoms vary so in individual cases (slight symptoms in some cases or *vice versa*) that it is difficult to diagnose the fact that there is a serious lesion in the abdominal cavity until it is too late. These cases go to pieces with extreme suddenness. He cited a case where the symptoms were not severe, and within half an hour there was a sudden collapse, with the passage of a large quantity of bloody fluid from the rectum. He is inclined to operate early in suspected cases of intestinal obstruction. The reason the mortality of intestinal obstruction is so great is the difficulty in making an early diagnosis or in making an early operation. When blood is present in the stools and vomiting, it is generally too late to do any good by operating. At times great distention will cause ulceration and bloody stools and vomiting. The sigmoid is a frequent seat of volvulus, and it may be enormously distended. Some abnormal condition is always at the bottom of a volvulus, and untwisting of the gut will not prevent a recurrence. The usual cause is an unusually long mesentery. Some operators advise stitching the bowel to the abdominal wall. One advocates plication of the bowel. Resection is probably

* See original article, page 63.

the best treatment. The question frequently comes up whether or not one should resect the gut. If the extent of bowel involved is not too great, resection is generally to be recommended. It may be necessary to open the intestine and empty the bowel by means of a tube. Moynihan points out that in making a diagnosis as to point of obstruction when the cecum is distended the obstruction is in the large intestine.

He cited a case where the patient was literally drowned in his own vomitus while being operated on. An important thing to do before operating is to wash out the stomach.

DR. BOVÉE said that there were two causes of volvulus not given by the essayist, *i.e.* strangulation from Meckel's diverticulum and from the utero-suspensio ligament. He wished some further information as to how to tell in which direction the twist has occurred. Volvulus of the large intestine is the most common. One of his earliest cases of laparotomy was volvulus of the sigmoid. The patient after the untwisting of the volvulus passed a large quantity of bloody fluid from the bowel and collapsed. One case had, after operation, twenty-eight movements of the bowels, with three hemorrhages, and finally a continuous movement of bowels and death from exhaustion.

DR. SPRIGG said a deep impression was made on his mind by the first case of volvulus which he saw. The case was a boy who was operated upon by Dr. Ford Thompson after he had been treated by cathartics for six days. When the abdomen was opened it was found out that the bowel had ruptured and one and one-half gallons of fluid were present in the peritoneal cavity. He lived for two and one-half years afterward. He believes in early operation. Purgatives are wrong in these cases. Enemata should be used instead. All should not go to the operating table, as other means may relieve in some instances. In a case coming under his notice there was an apparent volvulus of the sigmoid. The patient was lying on his left side and turned to the right side when there was a sudden violent pain. He was turned back, given a hypodermic of morphia, and the bowel distended with water, when there was a distinct gurgle and flop and the pain disappeared. In another case the child had a mass on the left side of the abdomen, with vomiting. The child was inverted and the rectum filled with water. There was the same gurgling sound, the vomiting ceased, and the patient recovered.

DR. VAUGHAN said that in a former paper he had given all the possible causes of volvulus, the present paper being written to add a few more cases. He did not dwell upon that side of the subject. He cannot remember Meckel's diverticulum being given as a cause of volvulus. He has been criticised for making a statement in his book that the diagnosis of ileus is easy to make. He repeats that it is easy to diagnose ileus, but very difficult to differentiate between the various forms. The treatment should be operative after mild measures have been used for moving the

bowels. He has no confidence in the method of inflating bowel with air and water. The cases which have been reported cured by this means would probably have gotten well without it. There is no excuse for confusion as to whether the twist is from left to right or *vice versa*. Imagine yourself in your patient's position and the twist is from left to right like the hands of a clock.

He hardly touched upon the treatment in his paper. Much might be said upon the subject. Resection is in many cases the best treatment. He does not believe in stitching bowel to abdominal wall. Plication is advised by many.

Meeting of February 1, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. FRY reported a case of

PUBIOTOMY.

He saw the case Monday night, January 28, 1907, in consultation with Drs. Luckett and Lewis. The previous history was as follows: Mrs. W., æt. thirty-three, II-para, was delivered by Dr. Luckett five years ago of a child weighing $8\frac{1}{2}$ pounds after a difficult forceps operation.

Her second confinement was expected December 29, 1906, but she did not come in labor until 3 A.M., January 28. The large size of the infant and the degree of ossification of the skull indicated that pregnancy had been prolonged. The waters escaped at 10 A.M., and labor pains were very strong. Dr. Luckett failed to deliver with forceps and called Dr. Lewis in consultation. Forceps were again employed and axis traction used. Patient was then sent to the George Washington Hospital and Dr. Stone saw the case in consultation. He advised symphyseotomy or pubiotomy. Dr. Lewis favored Cesarean section. Dr. Fry was then called in consultation and agreed with Dr. Stone. The fetal heart sounds were distinct; the os fully dilated; head at the brim; Caput succedaneum large; external conjugate measured $17\frac{1}{2}$ cm. (7 in.); obstetrical conjugate $8\frac{1}{2}$ cm. ($3\frac{1}{2}$ in.). Catheter brought about two ounces of bloody urine.

Cesarean section was discarded because of the prolonged efforts that had been made with forceps and the fear that injury of the bladder had occurred. Pubiotomy was advised because of minor degree of pelvic contraction and the full dilatation of the cervix.

Patient was removed to the operating room and prepared. A ligature carrier was inserted through a small incision above the bone and about one cm. to the left of the median line. Guided by the finger in the vagina the carrier was passed behind the bone and brought out through the skin to the left of the labium majus about on a line with the clitoris.

Bone readily severed about one cm. to left of symphysis pubis with the Gigli saw; forceps applied and infant easily extracted. Infant alive, weight $10\frac{1}{2}$ pounds. The bone separated about one cm., but later to five or six cm. The pelvis was not properly supported, and the anterior vaginal wall was torn; sutured with catgut. The child's head was unusually large and well ossified. The anterior fontanelle was nearly closed. Diameter of the head—occipito-frontal— $13\frac{1}{2}$ cm., suboccipito-bregmatic, 12 cm., biparietal 11 cm. Pelvis strapped with broad adhesive strap. Hot intrauterine douche, sterile water, and gauze tampon. Patient had no shock. Severed ends of bone in close opposition.

(On the eighth day patient was allowed to turn and on the tenth day to sit up in bed. Finger inserted and in contact with bone failed to detect any motion. Patient removed home $3\frac{1}{2}$ weeks after operation. Baby developed meningeal symptoms and died after four or five days. Autopsy, fracture of occipital bone in two places and clot at base of brain.)

DR. LUCKETT said that he had attended the woman in a former labor in which the child was delivered with forceps with the assistance of Dr. Lockett, Senior.

DR. STONE found a certain number of things which he might do differently, *i.e.* he would make the incision lower and as far as possible from the vagina. Any incision near the bone would probably permit the saw to be brought out of the same incision. The general surgeon would probably have wired the bones and probably with advantage. He advised pubiotomy rather than Cesarean section on account of the previous use of the high forceps.

DR. LEWIS said that it had been emphasized that considerable force had been employed in the use of the forceps and that the injury to the child's head had probably occurred in that way. He had used rather powerful traction, and the bloody urine indicated that injury had been done the bladder. He was glad to have seen the operation, but would like to have seen better results to both mother and child. The mother has had considerable fever and the child died.

DR. CARR wished to put himself on record as opposed to pubiotomy. Symphyseotomy is, in his opinion, a better operation. With it you can safely separate the bones $2\frac{1}{2}$ inches, while with pubiotomy you cannot safely separate them so widely.

DR. VAUGHAN asked whether or not an operation had been done on the child for the blood clot. There is no reason why it should not be done in children as well as adults; in fact, it is an easier operation.

DR. FRY said in a similar case he would do the same operation again. Various methods have been adopted. Dührssen advocated bringing the saw out of the same incision, but he has abandoned it. He would not go too far from the joint on account of the danger of injuring the obturator vessels. In regard to operating on the infant there is no way to locate the site of the

hemorrhage. He has no anxiety on the mother's account. The elevation of the temperature is probably due to the tampon of gauze damming back the uterine secretions. As to wiring the bones he can only say that it was tried in symphyseotomy and abandoned. He thinks if Dr. Carr would read the recent literature on the subject he would change his ideas as to pubiotomy and symphyseotomy. Wiring will not alone hold the bones in opposition, and the other methods of support are also needed. One can get as wide separation in pubiotomy as in symphysiotomy, as the distance from the symphysis to the point where the bone is sawed through is only $\frac{1}{2}$ cm.

DR. THOMAS read the essay of the evening,

ABDOMINAL SYMPTOMS IN PULMONARY DISEASES IN CHILDREN.*

DR. ADAMS said that in infants under two years abdominal symptoms are very apt to be present in pneumonia. It is well to remember that the child is taught to refer all pain to the abdomen; consequently it is not surprising that the pain in the chest should also be referred to this part of the body. He has yet to see a child under five years who, if asked where the pain of a pneumonia is, will place the hand over the area of consolidation. The symptoms may simulate gastrointestinal disease on account of the medicines, such as calomel, that are given. Pneumonia in children is frequently overlooked. He was recently called in consultation for what was considered ileus for which an operation had been proposed. The child had pneumonia and the crisis came in twelve hours. He saw a case with Dr. Stone where the abdominal symptoms were marked, but the case proved to be one of pneumonia. Examples like those given by Dr. Thomas are not rare, not that they actually come to the operating table, but nearly so. In making the diagnosis of pneumonia the expiratory grunt is characteristic, as it is seldom seen in intestinal diseases.

DR. BALLOCH.—The paper is timely and instructive and of especial interest to him because he has seen a case where the mistake was made of regarding a beginning pneumonia as some abdominal affection. The patient, a boy of ten years of age, a few days ill, had high temperature, rapid pulse, and pain in abdomen. The liver seemed enlarged and pain and tenderness were present in the right upper quadrant of the abdomen. There was also a slight yellowish tinge to the conjunctivæ. The examination of the lungs was negative. Operation showed nothing abnormal in peritoneal cavity, but pneumonia developed in both lungs with a fatal termination. Two weeks after this Richardson published his paper on the subject. In every case where the symptoms point to abdominal disease one should make a careful

* See original article, page 33.

examination of the chest. This is particularly true of children.

DR. MORGAN does not believe mistakes of the kind are generally made, but wonders that more abdomens are not opened where pulmonary disease gives rise to the symptoms. Pneumonia complicated by abdominal disease does occur. In nearly all cases where the pain is referred to the abdomen diaphragmatic pleurisy is present and unless there is pleurisy abdominal pain is not present. The essayist has gone fully into the nerve supply which explains why this is true. Dr. Adams says that infants refer pain to abdomen. Earache is certainly an exception. Pneumonia may be confounded with abdominal diseases not only on account of the pain but because it frequently begins with loose bowels. Pneumonia is at times thought to be typhoid fever where the former is not of a frank variety and there is diarrhea. He calls to mind a case of pneumonia accompanied with icterus where the pneumonia was not suspected for days.

DR. VAUGHAN.—The paper emphasizes the fact that a great many mistakes in diagnosis are made. The mistake is an old one and it is impossible at times to tell whether the process is in the chest or abdomen. It is surprising that more mistakes of the kind are not made. Dr. Richardson is nearly correct when he says that it is safer to operate too often even at the risk of making this mistake than to delay operation in certain acute abdominal affections. He has seen cases (purulent pericarditis and pleurisy) where the process (inflammatory) extends from the lungs to the peritoneum, and has also seen the infection extending in the opposite way. It is impossible to make a diagnosis in a certain number of cases, but there are certain signs which aid, *i.e.* rigidity is not so great where the process is not in the chest, and waiting will also at times make the diagnosis clear. Often, however, it is not safe to wait. He has just had a case of round ulcer with perforation and general peritonitis where waiting caused harm.

DR. LEWIS asked if Dr. Thomas had ever seen a case of pneumonia in which there was complete paralysis of the alimentary tract. He had a case of this nature which proved fatal.

DR. BALLOCH.—The essayist said that one sign was that the rigidity disappeared in the interval between respirations. With a patient breathing 40-50 times per minute this sign would be difficult to get.

DR. WHITE thinks that in the cases where the mistake has been made the disease was not a frank pneumonia. He cannot understand why a pneumonia of the upper right lung should cause pain in the left lower abdomen. The abdominal pain in pneumonia is not limited entirely to children. The only case which has come under his observation was an adult. In abdominal pain, etc., pointing to appendicitis he does not see how we can wait two or three days to see if a pneumonia will develop.

DR. MILLER thought the paper an excellent one. It emphasizes the necessity of doing what is so frequently neglected before operation, *i.e.* of making a thorough general examination of the patient. It impresses also the necessity to make if possible a diagnosis of the condition for which we are going to operate, something that has for years been regarded by him as essential to good abdominal surgery. We should not only know that there is an abdominal condition requiring surgical interference, but should know just what that condition is, as it may materially modify the nature of the surgical interference to know this. The pulmonary affection and the abdominal disease may at times co-exist and we should not, because we find a pleurisy or an area of bronchopneumonia, neglect to look for an appendicitis, a liver abscess, etc. Numerous authors have written concerning the prevalence of appendicitis during epidemics of influenza and we know also the numerous cases of pneumonia which also result from influenza. The possibility of the coexistence of pneumonia and appendicitis following an attack of gripe was impressed on him by the case of a little girl upon whom he and Dr. Bowen operated for appendicitis which occurred immediately following an attack of gripe. There was no doubt about the diseased appendix, and although chloroform was given in very small quantities, in twelve hours the child had a chill and very high temperature and died of pneumonia. With intestinal obstruction, especially volvulus and strangulated hernia, pulmonary affections are very apt to follow, and, at times, do also accompany them, so that we may have both conditions existing at once.

DR. LOREN JOHNSON said that he had frequently noticed that immediately before operation the surgeon would ask the interne if the patient's heart and lungs were all right, and wondered that heart and lung lesions do not oftener exist unsuspected where patients are operated on for appendicitis, etc.

DR. THOMAS in closing said that the discussion of his paper showed that when a rare subject is brought up more cases are always brought to light. His paper dealt only with children. He had seen more cases in adults and cited a case of the kind recently seen at the Emergency Hospital, also a case of pulmonary tuberculosis which he had sent to the sanitarium near Washington. As to the relaxation of the rigidity of the abdomen at the end of the expiratory act, there is an instant of absence of the rigidity which we cannot elicit in peritonitis. Many authors refer to it and it is a valuable sign.

In the majority of the reported cases no peritonitis existed, so that there was no coexistence of the two affections. In Dr. Lewis's case the phrenic nerve was probably involved. Head believes the phrenic and sympathetic nerves are involved in these cases and has shown that reflex pains can be caused in the head,

thighs, etc., due to inflammatory lesions in the lungs and pleura. The paper was written to show that the mistake of confounding pulmonary with abdominal diseases and the best way to prevent this occurring is to bear in mind the possibility of mistaking lung for abdominal disease. Many of the reported cases have been carried to the surgeon, who discovered the true condition. Cases where the diseases coexist are very rare.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of May 1, 1907.

The President, DR. H. R. SPENCER, in the Chair.

A short communication was read by DR. C. R. PORTER
ON A CASE OF INTRAPERITONEAL RUPTURE OF THE BLADDER OCCUR-
RING DURING LABOR.

A primipara, aged thirty-two, who had never complained of previous bladder trouble of any kind, was seen forty-eight hours before labor had really commenced on account of vague pains referred chiefly to the sacral region and which were thought by the patient to be labor pains. There was then no undue distension of the bladder to be made out by abdominal examination. Urine had been passed that day. Two days later labor pains started in earnest, but medical aid was not summoned until twelve hours had elapsed. The nurse in attendance gave a history that labor had been progressing in the ordinary way for about twelve hours, when, during a pain, the patient suddenly cried out that "something had given way inside," and from that moment became very ill indeed. When seen the patient looked very ill, the pulse was very rapid, the tongue dry, and the abdomen was much distended and tympanitic. Ordinary labor pains were not to be distinguished from the acute general abdominal pain complained of, though some contractions of the uterus were still to be made out. The child was lying in the first vertex position, the os uteri fully dilated, and the head well down in the pelvis. Labor was not apparently obstructed except by the absence of efficient uterine contractions. It was thought that some grave intraperitoneal catastrophe had complicated labor, and in view of the serious condition of the patient chloroform was at once administered and a full term well-nourished male child was easily delivered with forceps. After some post partum hemorrhage the uterus contracted down well. The umbilical cord was nearly pulseless on delivery and the child died in about an hour. The general abdominal pain ceased

to be complained of after delivery. The general condition of the patient had not improved five hours afterwards, the pulse and respiration being still very rapid and the abdominal distension considerable. Twenty-four hours after delivery the patient had not passed urine, had vomited frequently, and was obviously worse. It was decided to risk her removal to hospital eight miles distant. On admission she was much collapsed. A catheter specimen yielded about four ounces of almost pure blood. The patient was anesthetized, the abdomen opened in the middle line below the umbilicus. A considerable quantity of urinous fluid mixed with serum escaped from the general peritoneal cavity. The stomach was enormously distended with gas, which was evacuated by a small trocar thrust into the anterior wall of the stomach after extending the abdominal incision upwards. This made examination much easier, and a small vertical rent about one and one-half inches long was found in the upper and posterior aspect of the bladder to the right of the middle line. This was closed by Lembert sutures and the abdomen sewn up with silkworm gut, the lower angle of the wound being drained with a large rubber tube. The patient was not very markedly worse for the operation, but died from shock about six hours later. No autopsy was allowed.

A paper was read by MR. ALBAN DORAN on

A CASE OF MALIGNANT VAGINAL POLYPUS SECONDARY TO AN ADRENAL TUMOR OF THE KIDNEY.

A married uniparous woman, aged forty, suffered from rigors and sweats in September, 1906. A mass was detected in the vagina, and a small tumor in the right iliac fossa. The vaginal growth was a racemose body attached by a well-defined pedicle to the lower part of the anterior wall of the vagina; its lobules, more or less necrosed, were shed from time to time. Three sessile growths lay in the posterior wall, the mucosa over one was pigmented. In November the author removed the abdominal tumor, which proved to be a malignant adrenal growth in the upper part of the right kidney. The patient declined to allow a second operation for the extirpation of the vaginal growths; lobules of the pedunculated tumor continued to come away. She survived the nephrectomy three months. After death secondary deposits were discovered in the liver and right lung; their presence in the lung had been diagnosed before death. On microscopical examination it was found that the vaginal tumors, as well as the growths in the liver and lung, were of the adrenal type, and therefore secondary to the tumor in the kidney.

In this case a pedunculated tumor developed in the vagina, the slow, constant sloughing of its lobules probably accounting for the rigors. The tumor bore characters usually associated with the type of new growth known to pathologists as "primary

sarcoma of the vagina in the adult" (Gow, Veit). Secondary deposits in the lung have been recorded (Herzfeld, Bajardi) and pigmentation has been observed (Horn, Morestin, Boldt). In the author's case, however, sections of the lobules shed from the pedunculated tumor showed the same structures as was seen in sections from the renal tumor. Hence there could be no question of coincidence of a primary vaginal sarcoma and an adrenal tumor or "hypernephroma" of the kidney; the latter being, without doubt, the primary growth.

DR. BECKETT OVERY described a similar case in which a polypoid mass had been found attached to the anterior vaginal wall. This was removed and a large tumor in the right side of the abdomen was discovered. Two months later the vaginal growth had recurred and it was again removed. The patient died a month later. The postmortem examination showed that the abdominal tumor was primary and was a malignant adrenal tumor starting in an adrenal rest. There were numerous secondary deposits in the liver and lungs, sections of which showed more or less typical adrenal tissue.

Specimens.—MR. J. BLAND SUTTON showed a uterus four years after Cesarean section in which the sutures used to close the uterus at the time of the operation were still visible.

DR. LEWERS showed two specimens (and sections under the microscope) of cancer of the cervix removed by operation, one twenty years ago, and one eleven years ago, the patients at the present time remaining free from recurrence.

DR. MAY THORNE showed a uterus removed by operation in which there was a villous malignant tumor as well as a fibroid undergoing sarcomatous change.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Glycogen Contained in the Maternal Liver in Pregnancy and the Puerperium, in the Placenta, and in the Liver of the Fetus.—E. Opocher (*Annali di Ostet. e Gin.*, March, 1907) has conducted two series of experiments on rabbits to ascertain the amount of glycogen contained in the maternal and fetal livers during pregnancy and the puerperium. His conclusions are given in a summary. In pregnancy there is an increased amount of glycogen in the liver. This increase is not regular and progressive, but more marked during the last months of pregnancy than in the earlier part. If this increase of glycogen depends on changes in metabolism in pregnancy the variation depends probably on the amount of glycogen needed by the fetus in the various epochs of intrauterine life, which is much greater in the early

months than later. The reason for this increase is to prepare an amount of material to be used in lactation and for the labor, and to aid the maternal system in eliminating the poisons which accumulate during pregnancy. The glycogen in the placenta, which maintains an equilibrium throughout pregnancy, stands in evident relation with the variations of hepatic glycogen in the mother and the fetus. In the first days of the puerperium the reserve of glycogen is consumed rapidly, the cause of its increase having passed away.

Therapeutic Indications in Cancer of the Uterus Complicating Pregnancy.—Oui (*Ann. de Gyn. et d'Obst.*, April, 1907) considers the influence of pregnancy upon the development of cancer, and the influence of cancer on the progress of pregnancy and on the fetus. The author believes that it is impossible to say positively that the occurrence of pregnancy causes a more rapid development of the cancer. For the mother mortality immediately following labor and the puerperal state is not the result of the cancer alone, but of infection, and may be most favorably modified by the skill of the physician. For the child, interruption of labor before the arrival at term may kill it in about one-quarter of the cases, while a rapid and well-conducted intervention will in most cases bring about successful delivery at term. As to the care of the patient during pregnancy we must distinguish between operable and inoperable cases. If inoperable only palliative treatment for the mother is to be considered. In operable cases, during the first two months, with a small cancer distinctly localized, hysterectomy is permissible. Later premature accouchement is not permissible. Curettage of fungosities and amputation of the cervix should be proscribed, since they sacrifice the child and do not help the mother. Hysterectomy should be done early, not waiting for the time of labor at term, since the child is seldom benefited and the mother will be sacrificed by the loss of her chance of successful operation. The conduct of labor will depend on whether a small or a large part of the cervix is involved in the cancer. If the cancer is small dilatation may be possible, and labor may terminate naturally, though slowly. All forcible extractions should be proscribed, a Cesarean section being done in preference when it is necessary to interfere to save the child. If the cancer is inoperable, a Porro operation is most successful in prolonging the life of the mother. The Cesarean section must be done early, before the child has been weakened by prolonged efforts at delivery. In operable cancer the section should be followed by an immediate hysterectomy, which removes the source of possible puerperal infection and the growth at the same time.

Pregnancy and Smallpox.—Queirel (*Ann. de Gyn. et d'Obst.*, March, 1907) states that the occurrence of smallpox in a pregnant woman is very unfavorable, as abortion is very apt to occur, and both fetus and mother may die. More than fifty per cent. of the mothers die in some epidemics. This is due to the

severity of the disease, which when confluent is always fatal. When discrete it may not cause abortion. In slight cases there are no untoward effects on child or mother. Many mothers who abort do not die as a result, but all who die do abort, unless the case has been so rapid that labor could not take place before death ensued. An interesting question is why the abortion takes place. After a discussion of the various theories advanced to account for its occurrence, the author concludes that it is due to the transmission of the microbe of variola to the fetus, which causes septicemic phenomena and microscopical lesions of the placenta. The period of pregnancy at which the disease occurs has no influence on the induction of abortion or on the gravity of the prognosis. As to the treatment of the condition, the author recommends as a prophylactic the vaccination and revaccination of pregnant women in times of epidemics of smallpox, with a view to preventing the infection.

Diagnosis of Early Pregnancy.—L. J. Ladinski (*Med. Record*, April 13, 1907) describes as diagnostic of early pregnancy the following sign elicited by bimanual palpation. Frequently as early as the fifth week, but always in the sixth week, there can be felt in the median line in the anterior wall of the body of the uterus just above the junction of the body and cervix a circular area the size of the tip of the finger, which presents the sensation of an elastic fluctuation. This area increases in size in a crescentic manner, until between the third and fourth month, when nearly the entire anterior body, with the exception of the upper crescent of the fundus, partakes of this change, and gives the cystic fluctuating feel to the examining finger. The change appears in the anterior wall of the uterus when the uterus is in the normal position or slightly anteverted, but in extremely retroverted or retroflexed uteri the elastic area appears in the posterior wall, but instead of being perceptible in the fifth or sixth week of pregnancy is usually felt in the sixth or seventh week. In incomplete abortion or subinvolution there is a change in the consistency of a similar area of the uterine wall, but while in pregnancy the feel of this area is distinctly elastic or cystic, the sensation obtained in subinvolution and incomplete abortion is soft and doughy.

Lymphatic Glands in Pregnancy.—A. W. Meyer (*Surg., Gyn. and Obst.*, May, 1907) has studied clinically the lymph nodes of 59 pregnant women. The axillary and inguinal lymph nodes were found palpable in 98.3 per cent. of all cases; the submaxillary in 74.6; the supratrochlear in 30.5; the posterior auricular in 10.1. Progressive enlargement of the axillary lymph nodes was noted in 25.4 per cent. of all cases; of the inguinal, in 15.2 per cent. The enlargement of the submaxillary nodes was invariably due to affections of the teeth, mouth, or throat. The suprahyoid nodes were palpated in one case only. No cause could be found. A more or less marked enlargement of the axillary nodes coincident with lactation was observed in 62.5 per cent. of the cases exam-

ined approximately three days post partum. No similar enlargement of the inguinal nodes was observed, save in one case, in which there was a marked leucorrhea. No general enlargement of the lymph nodes was observed. The enlargement noticed in the axillary, inguinal, and submaxillary regions is thought to be largely, if not wholly, due to local causes, dependent, in the case of the axilla and the groin, upon pregnancy; in the case of the submaxillary region, upon affections of the teeth, gums, mouth, and throat. In the negro women the nodes were found larger, and oftener became enlarged, shown especially in the axillary, submaxillary, supratrochlear, and posterior auricular regions. These differences are thought to be due mainly to larger and better functioning breasts, and to greater neglect of the teeth in case of the axillary and submaxillary nodes, respectively, and to the greater frequency of affections of the scalp in the negro race as regards the posterior auricular group. Discrepancy in size between the nodes on the right and left sides of the body were common in the submaxillary region, infrequent in the axilla, and rare in the groin. Fluctuations in size during the period of observation varied similarly, save that they were more frequent in the axilla after the onset of lactation. These fluctuations in size were often sudden and marked in case of the submaxillary and axillary nodes, but always gradual and slight in case of the inguinal group. No new formation of lymph nodes was observed.

Exophthalmic Goiter in Relation to Obstetrics and Gynecology.—Sir Halliday Croom (*Edin. Med. Jour.*, May, 1907) says that while exophthalmic goiter is a comparatively frequent disorder of women, its combination with pregnancy is very rare, as is shown by its absence from the records of 15,000 hospital cases, while he has seen only twelve personally. The influence of pregnancy upon exophthalmic goiter is very uncertain, and in the majority of cases it aggravates it. The effect of exophthalmic goiter on pregnancy is practically *nil*, and most pregnancies complicated with exophthalmic goiter follow a regular even course. Of the accidents that occur the most frequent is hemorrhage, and occasionally abortion. The relation between pelvic disease and exophthalmic goiter is rare, and the effect of exophthalmic goiter on the reproductive system is in recent cases to cause irregular menstruation, mostly in the direction of menorrhagia, while in very advanced cases it may cause amenorrhea. It is apparent, therefore, that girls suffering from exophthalmic goiter need not be precluded from marrying and from pregnancy. If pregnancy occurs there is no reason, except in advanced cases, to interrupt the pregnancy, even in spite of the fact that the children of women with exophthalmic goiter may be expected, according to some authorities, to develop neuropathic manifestations.

Remote Causes of Perineal Lacerations.—Frank Hinchey (*Surg., Gyn., and Obst.*, May, 1907), discusses this subject from the standpoint of development. He believes that disproportion

of the head to outlet is due to man's subversion of the law of the struggle for existence and the law of sexual selection, by virtue of which subversion an excessive range of variation is permitted to obtain. The resistance of the perineum is due to the necessary development of a pelvic floor to support the superimposed viscera, in consequence of the attainment of an upright posture. In developing this floor, the levator and muscle, coccygeus muscle, and pelvic fascia draw forward the caudal vertebræ, causing elimination of the tail, and fusion of the lower sacral vertebræ, with changes in the innominate bones.

Valvular Disease of the Heart in Pregnancy and Labor.—

F. S. Newell (*Surg., Gyn., and Obst.*, May, 1907) says that any organic heart lesion, even if perfectly compensated under normal conditions of life, should arouse apprehension and call for constant watchfulness if pregnancy supervenes. In case pregnancy comes as a complication when the heart lesion is imperfectly compensated, the indication is for immediate relief by emptying the uterus, since a heart which is not able to care for its ordinary work has no chance of supporting the added burden of pregnancy. When a previously well-compensated heart fails under the extra work thrown on it by pregnancy, an attempt may be made to restore compensation by rest and appropriate treatment, but, unless these measures are promptly successful, the heart must be relieved by the removal of the extra burden. In any case in which an organic heart lesion can be demonstrated, even though it may have caused no symptoms during pregnancy, labor should be regarded with apprehension, and every means should be taken to shorten the strain of labor, and thus relieve the heart of its extra burden, although it may seem to be doing its work satisfactorily.

Treatment of Placenta Prævia in General Practice.—Johannes Fùth (*Zent. f. Gyn.*, March 23, 1907) discusses the proper handling of placenta prævia outside of the hospital. Tamponade was the first measure introduced to lessen the hemorrhage while waiting for dilatation of the cervix and delivery. Next, it was proposed to perform combined version, allowing the child's head to act as the tampon. Later the metreurynter or inflated rubber bag was used as a tampon, at the same time dilating the cervix. When the cervix is entirely closed the finger can generally produce sufficient dilatation to introduce the uninflated bag. The author has collected 726 cases of placenta prævia delivered by the midwives of Koblenz. Delivery occurred in 137 cases spontaneously; in 484 by version; 42 times by traction; 23 times by forceps; once by perforation. Twelve women died before delivery was accomplished. In 27 the manner of delivery was not stated. Of the mothers, 143 died. In 186 cases pains succeeded the first hemorrhage; in 535 there was an interval of days, weeks, or months before labor came on. Of these first, 96 were tamponed; 90 were not. Of the second category, 349 were, and 186 were not tamponed. Of these last untamponed women 30 died. Of the 750 children 383 were born alive, 367 dead. In 51 cases no physician

could be gotten at the time of hemorrhage. This shows that there are great difficulties in the way of treatment of placenta prævia outside of the hospital. Tamponing is much less dangerous when it can be carefully watched. In the author's ten cases there were always two physicians in charge. The balloon was introduced in the morning, so as to deliver at night.

GYNECOLOGY AND ABDOMINAL SURGERY.

Abdominal Drainage.—Robert C. Coffey (*Jour. Amer. Med. Assn.*, March 16, 1907) has studied this subject by making a cast of the peritoneal cavity of a dead body and from this another cast representing the abdominal cavity. This was then sawed into sections. From these the writer was able to determine the relative depths of various portions of the abdominal and pelvic cavities. He concludes that gravity is the most important principle in peritoneal drainage, therefore drainage must reach the most dependent point of the cavity to be drained. The patient must be placed in the position that would naturally cause the fluids in the peritoneal cavity to gravitate to the drain, always bearing in mind the anatomy of the three anatomical cavities or basins. Gauze or capillary drainage is the most widely applicable and useful of all drains if used in sufficient quantity to preclude its being choked by débris and provided the drain is as large in circumference at its exit as it is at any point within the cavity, and provided it is in contact with abundance of dressings on the outside. Gauze drainage is a very dangerous agent if all the foregoing principles are not kept in mind in its application. If a surgeon remembers that his drain ceases to be effective in a few hours, he places it with the idea of removing septic fluid in the shortest time possible according to the principles of drainage, and usually gets results. If he is deluded by the belief that his drainage will continue to work for days and that fluid will run up hill to get to the drain, he will usually place his drain accordingly, and is consequently disappointed in drainage. If a surgeon habitually removes gauze drainage before it is loosened by the natural process, a large per cent. of his cases will have secondary sepsis, post-operative obstruction, or post-operative hernia. Drainage (except a small precautionary cigarette or tubular drain) can rarely be safely removed until the fifth or sixth day—many times are best left till the end of two or three weeks. Capillary drainage is inefficient for draining defined abscess cavities. Tubular drainage is appropriate for defined abscess cavities, but is an uncertain drain in the free peritoneal cavity except when aided by gravity.

Painful Peritoneal Adhesions.—Henri Violet (*Gaz. des Hôp.*, April 18, 1907) says that pelvic peritoneal adhesions left after an old peritonitis may constitute alone an affection that will bring the patient to the physician. There may result occlusion

of the intestine, acute or chronic, digestive troubles, or simply attacks of pain. There is often so little relation between the subjective conditions and the findings upon abdominal examination that the patient is treated as a neuropath. These results may come after a violent attack of peritonitis, of which the patient will give a history, or there may not be any remembrance of the attack, so slight was it and so gradual has been the appearance of the symptoms. The author's case presented intestinal occlusion, with such severe abdominal pains as to incapacitate the patient for work, yet she had no remembrance of the slight attack of peritonitis, due to a blow on the abdomen, that had been the starting point of the whole process. There were marked adhesions to the omentum over the front of the abdomen, and bridges of tissue which compressed the sigmoid flexure and produced partial occlusion. The patient had been treated for neurosis. After the liberation of the adhesions she found herself entirely restored to health and able to do hard work. The results of these adhesions may be divided into three groups: Pain and functional disorders; intestinal strangulation; affections which present all the characteristics of some abdominal disease. There may have been an acute peritonitis of the intestinal tract, entirely cured and leaving behind only adhesions. There may have been tubercular peritonitis of low degree evolving a fibrous condition and recovering entirely, with the exception of the adhesions. These adhesions become painful when they interfere with the intestinal circulation, simulating painful intestinal contractions. There may be adhesions about an ovarian tumor. There are always adhesions about large umbilical or inguinal herniæ. The peritoneum and abdominal organs are among the most insensible in the body. The pain caused by intestinal peritonitis is due to rubbing of the intestine against the abdominal walls; but when the peritoneum is inflamed the excitability becomes marked and much pain results. Distention and stretching of old adhesions or twisting of the contained organs will cause pain. Menstrual congestion also causes sensitiveness. Treatment is separation of the adhesions and prevention of their recurrence.

Action of Morphine Upon the Female Genital Organs.—Lutaud (*Jour. de Méd. de Paris*, April 13, 1907) says that in the course of a large experience with chronic morphine takers he has observed that it stops menstruation and produces an artificial menopause. If the drug is withdrawn menstruation will again appear. It also takes away the possibility of conception and all sexual desire. The same is the experience with men. These facts may be utilized in the treatment of women who are the subjects of menorrhagia and metrorrhagia in preventing the flow of blood. Such cases are menorrhagia without lesions in which the flow of blood is such as to exsanguinate and to threaten life. In such cases the use of morphine will preserve life and the patient need not necessarily acquire the morphine habit. In

fibroids that are inoperable it is possible by the judicious use of morphine to tide over the time until the atrophic changes of the menopause stop the hemorrhages. In uterine cancer the first duty of the physician is to make his patient a morphine user. It not only makes life tolerable by stopping pain and hemorrhage, but in some cases prolongs life for several years. Its effect is to retard vital exchanges and secretions, and at the same time to delay the growth of the neoplasm.

The Seroreaction of Syphilis.—C. Levaditi (*La Presse Méd.*, May 22, 1907) means by the seroreaction of syphilis a biological reaction analogous to seroagglutination permitting the recognition of the syphilitic antibodies. In man and monkeys the virus of syphilis exists in cutaneous or visceral lesions, in the blood and the affected organs in the form of the organisms discovered by Schaudinn and Hoffmann. They also contain the products of these organisms, and there are developed specific antibodies in the tissues. The seroreaction permits us to recognize the presence of infection in old cases when we cannot find the micro-organisms themselves. The method of Bordet and Genou is to be applied to these researches in the blood, lymph, and cerebrospinal fluid. Absence of hemolysis indicates the fixation of the complements by the antibodies. The antibodies cannot be found by any observers in the blood of individuals not infected with syphilis, but they can be found in the great number of syphilitic persons in the blood and tissues. The antibodies have also been found in the blood of infants affected with heredo-syphilis, in the placenta of these infants, in the primary and secondary lesions, in infected lymphatic glands, condylomata, gummata, and serpigenous ulcers. In monkeys one-half of the organs contain them. The antibodies of syphilis have been found in the cerebrospinal fluids of tabetics and general paralytics. The mononuclear leukocytes take an active part in the formation of these antibodies. These observations may lead to very precious results concerning the distribution of the syphilitic virus in the infected organs, the variations of their condition in different tissues, and their preservation for varying lengths of time in different cases. They may aid in diagnosis of latent syphilis and the knowledge of definite cure of old cases. But the method now in use is too slow and complicated to be used for diagnosis at the bedside.

Primary Cancer of the Vagina and Its Operative Treatment.—J. Jacob (*Zent. f. Gyn.*, April 13, 1907) says that this affection is comparatively rare and occurs in general after the menopause. This rarity is due to the small number of glands in the vaginal walls and the small amount of vascular tissues, as well as the ease of regeneration of the vaginal epithelium. There is much difference of opinion as to its operative treatment. It usually occurs in multiparæ. It may be diffuse in form, or begin with small circumscribed nodules, which become crater-form

ulcers. It generally occurs on the posterior vaginal wall, which is most exposed to irritation and erosion, and in the upper third. It is one of the most malignant types of growth, quickly involving the underlying connective tissue and the neighboring organs. This rapid involvement depends on the small amount of muscular tissue in its walls and on the lymphatic connections, which go to the broad ligaments and the rectum. From the vaginal wall the cancer soon passes to the cervix by the lymphatic glands as well as by implantation of cancer particles. The prognosis is very bad and recurrence frequent. Treatment can only be by operation, and there are several methods of approach: by vagina, by the perineum, and by the sacrum. The uterus must be extirpated at once, on account of the facility of recurrence in it, as well as the possibility of hematometra or hydrometra if it is left behind. The author describes the operation in two typical cases of vaginal cancer in women forty-four and fifty-seven years of age. He used the perineal operation, by which, although the operation is long, the cancer is kept entirely outside the wound, lessening the danger of implantation; bleeding is not very great; there is room for the operation; extirpation of the uterus is easy, and there is enough material left to make a useful vagina in married women.

Hypertrophic Stenosing Tuberculosis of the Urethra in the Female.—Henri Hartmann (*Rev. Fran. de Méd. et Chir.*, April 25, 1907) states that although tuberculosis with stenosis of the urethra is rare in the female he believes that when looked for it will be found to be more frequent than has been supposed. The case that he describes occurred in a woman of twenty-seven years of age, who had had symptoms of difficult and painful micturition for many years. Treatment instituted had made her worse rather than better. Examination showed a stenosis of the urethra from the presence of a tuberculous mass about the urethral orifice, in the midst of which the small meatus was seen on a ridge of tuberculous tissue. Excision of the growth and reunion of the mucous membrane of the urethra with that of the vulva gave immediate and permanent relief. Stenosis of the female urethra from cicatrization is rare. The author believes this to be the first published case of urethral tuberculosis.

DISEASES OF CHILDREN.

Severe Anemia in a Child.—Charles E. Teeter (*Jour. Amer. Med. Assn.*, Feb. 16, 1907) reports what appears to be a case of toxemia of unknown origin in a child six years of age, producing a rapid destruction of red cells, with marked stimulation of the bone marrow and spleen, the cells characteristic in the adult of myelogenous leukemia appearing in the blood. Since it is not unusual in children, during the initial rise of a severe leukocytosis, to find immature forms in the circulation, including myelocytes

and nucleated red cells, the author recognizes that this case is probably one of unusually high count accompanying a severe infection with great destruction of red cells. The onset was sudden, with headache, malaise, nausea, and fever, followed by vomiting and hematuria, and signs of pericarditis, with some effusion. The liver was somewhat enlarged; the spleen was palpated two inches below the free border of the ribs. Blood examination showed 1,530,000 red cells, 132,800 white, 20 per cent. hemaglobin. Differential count gave polynuclear neutrophils, 58.75 per cent.; lymphocytes, 19.5 per cent.; unclassified, 6 per cent.; mononuclears and transitional, 4.25 per cent.; basophiles, 5 per cent.; myelocytes, 10.75 per cent.; Turke's cells, 0.25 per cent. There were 20,000 nucleated red cells per c.mm., of which megakaryoblasts were 10 per cent., normoblasts 68 per cent., metarubricytes 19 per cent., microblasts 1 per cent. Red cells subsequently reached 1,000,000, white 132,000, hemaglobin still 20 per cent. After the eleventh day improvement was quite rapid, and in three months the hemaglobin reached 100 per cent. and the child seemed perfectly well.

Pseudo-Rheumatism Accompanying Parotiditis.—E. Sorel (*Ann. de Méd. et Chir. Inf.*, Feb. 1, 1907) reminds us of the many forms of pseudo-rheumatism accompanying the various infectious diseases, such as diphtheria, scarlet fever, typhoid, etc. He adds the description of a generalized pseudo-rheumatism occurring in the course of an attack of mumps. Bacteriological and microscopic examinations of the fluid in the joints were made. There was a marked effusion into the knee and other joints, followed by plastic exudation. There was no heart complication. The bacteriological investigations were negative. Some authors have isolated from the secretions in mumps microorganisms of the micrococcus tetragenus type, which is generally found in pure culture in epidemic diseases. The blood examination showed many polynuclears, lymphocytes, and large mononuclears. Mononucleosis was the characteristic of the articular fluid in this case, while in true rheumatism polynucleosis is the rule.

Treatment of Chronic Coryza of Scrofulous Children.—E. F. Christin (*Le Progrès Méd.*, March 23, 1907) describes the treatment of chronic coryza in children of scrofulous diathesis by the use of the warm arsenical waters of the springs at Borboulle, France. There are many children from six to fifteen years of age that are pale, with anxious expression, and suffering from a continual mucopurulent discharge from the anterior and posterior nares, without odor. This is swallowed, and runs over the lips. Rhinoscopic examination shows an atrophic mucous membrane and masses of mucus. Posteriorly there are seen large pale vegetations and traces of operative interference. The pharyngeal tonsil is ridged and the hollows contain mucus. The glands of the neck are enlarged. There are frequent complications re-

sulting from infection of the auditory apparatus and larynx, as well as a tendency to bronchitis and tuberculosis. The general condition is the main cause of the affection, not the local lesions. The position of Borboule, on elevated ground, is of value climatically. The valley is protected from the north winds and opens toward the south. The effect of the arsenical water on the general health is marked. It is also useful at the normal warm temperature of the springs in the form of douches to the nasal mucous membrane. It produces a congestion of the respiratory mucous membrane and an increased capillary and glandular activity which is of great value in such cases. The arsenic in the water also has an effect on the mucous membrane.

Surgical Treatment of Empyema.—Samuel Lloyd (*Ann. Surg.*, Mar., 1907) says that the usual operations for empyema are based upon the idea that when the lung has once fully collapsed and become firmly adherent the pulmonary pleura has lost its expansibility, so that it will not allow sufficient reexpansion to allow the pulmonary and parietal surfaces to come into contact. In the author's operation the opening in the chest is made in the usual way, and should take in from one to three or four ribs, according to the size of the cavity and the difficulty of reaching the collapsed lung. In young children one rib is usually sufficient. The piece removed should be from 2 1-2 to 3 inches in length, and as a general rule the sixth, seventh, and eighth are selected. The pleura is incised, and the accumulated fluid is allowed to drain away gradually at first. Ether is the anesthetic of choice, for the reason that we can have the patient under complete anesthesia until the ribs are removed, and the effects of the ether narcosis last longer than the other anesthetics after stopping the administration. Before opening the pleura, the anesthetic should be completely stopped, in order that if we get a sudden expansion of the lung by its breaking away from its retaining adhesions we may not get an overdose of the anesthetic, and in order that during the remainder of the operation the patient may be gradually coming out from the effects of the anesthetic. As soon as the fluid has drained away, the opening in the pleura is made sufficiently large to enable the operator to make a thorough exploration of the whole pleural cavity, and to accurately locate the position of the collapsed lung. If there are large masses of coagulated lymph filling the cavity or adhering to the pleura, they should be at once scraped away, using a curette if necessary. The finger is then swept upward, if the lung is in the apex, until its margin is recognized, and a separation of the adhesions is carried on in exactly the same way that we separate the adhesions in the peritoneum. If these adhesions are so firm that they will not yield readily to the sweep of the finger along the pleural surfaces, the lung should be raised and a curved periosteotome swept along the parietal surfaces until the adhesions are freed. During the prog-

ress of this maneuver the sensitiveness of the pleura asserts itself, and the partially anesthetized patient begins to cough with each sweep of the finger over its surface. With each forced expiration, expansion in the lung is seen to take place, until when the adhesions are fully broken up the lung, with its pleural covering, will fill the pleural cavity and even press outward through the wound. If the lung is compressed against the side and attached to the diaphragm, it is advisable to loosen the diaphragmatic adhesions first. As far as possible the operator should keep in contact with the parietal pleura during the separation of adhesions, to avoid tearing the lung. If a vessel is opened in some portion of the lung that is not directly under the field of observation, the operator should at once have the anesthetist put back his anesthetic and bring the patient under complete narcosis. The lung will then again collapse and the bleeding will either stop from this alone, or it can be found and controlled either by means of the Paquelin cautery or any other measure that may seem advisable. As soon as the lung is fully expanded, a drainage tube with broad, flat ends like a spool is inserted, the skin wound closed around the tube and a voluminous dressing applied. The after-treatment is the same as in other operations for empyema.

Treatment of Harelip and Cleft Palate.—G. V. I. Brown (*Jour. Amer. Med. Assn.*, Mar. 2, 1907) says that the reasons advanced by the advocates of operation within three months after birth are that there is less nervous shock because the nervous system of the child is not well developed and the child is not capable of receiving the same impressions that it would later in life; that there is better reaction and less shock in young children because of less alarm and dread; that there is less deformity, for they claim all the tissues, bony as well as soft, develop naturally and according to accepted types; and that there is development such as will allow normal speech to follow when the child reaches speaking age. He says that any estimation of the mortality results of early operations is misleading, as many cases die of inanition even without the added strain of an operation. He calls attention to the fact that infantile mortality and susceptibility to infection are greatest during the first year, and that in all probability the resisting power is greater after that time. While it is more convenient to operate upon the cleft palate before closing the lip fissure, proper adjustment and fixation of the maxillary bones in their right relation and better circulation for the nutrition of flaps are secured by closure of the lip borders and anterior portions of the palate, and so this contributes to a successful result when the palate fissure is closed. Early closure may interfere with development of the teeth and so cause facial deformity by influencing the shape of the maxillary bones, nares, orbits, and palate. Complete stenosis of one naris or partial of both may also result from closure of the palatal fissure by immediate pres-

sure. The writer favors placing a strip of zinc oxide plaster across the lip fissure immediately after birth and renewing this from day to day with increased tension as the parts are brought into closer opposition. This prevents increase of deformity by muscular action, brings the sides into symmetrical position, accustoms the child to tension upon the lip so that it is less likely to attempt to tear out sutures after operation, teaches it to take nourishment more naturally, and by closing the wide opening leads to proper breathing, which might be difficult after the operation if the child had previously had the larger air passage. The writer thinks that several slight operations with sufficient intervals are less dangerous than a single more radical procedure. The anesthetic should be given only in sufficient quantity to avoid actual pain. Scrubbing and alcohol only should be used to disinfect the mucosa before the operation and hydrogen peroxide used to clean the palate after it. All the operations should be completed before speech habits are fixed.

Cases Allied to Amaurotic Family Idiocy.—Amaurotic family idiocy presents the following characteristic features: Progressive mental weakness; inability to hold up the head; muscular wasting and cachexia, which leads to a fatal termination at the age of from two to three years; convulsions and exaggerated reflexes; amaurosis with changes in the eye grounds. The latter show a white, bluish area in the macular region, in the center of which is a cherry-red spot. The affection occurs in early infancy in individuals of the same family and often in Russian Hebrews. In two cases reported by Alfred Gordon (*N. Y. Med. Jour.*, Feb. 16, 1907) and somewhat resembling the above condition, both patients were early found to be blind. The girl, now thirteen years old, is totally blind; the boy, at nine years, is so to a great extent. Mental deficiency was noticed since infancy, especially in the girl. The patients are brother and sister, the children of Russian Hebrews. There is optic nerve atrophy, though the cherry-red spot in the macula is absent. The writer thinks that in amaurotic family idiocy some profound anomalies of the ductless glands may be the real cause of the anomalous condition of the cells of the nervous system. In one case which he quotes a small thymus was found; in another the suprarenals were pale, yellow, firm, and each contained a central cavity. Of his own cases, one had an enlarged thyroid gland; in the other it was not palpable.

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ORIGINAL COMMUNICATIONS.

NOTES ON CONSERVATIVE OVARIAN SURGERY.*

BY

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OPERATIVE progress in gynecology, as regards ovarian surgery, has been marked by extremes. A decade ago we ablated freely. The pendulum then swung to conservatism and our efforts were directed to the saving of everything. It was a distinct advance in our technics, as the distressing effects of an artificially induced menopause were combated and a halt was called on promiscuous castration. The gynecologist instilled into the minds of the profession the necessity of preserving intact, as much as possible, the genital apparatus of woman by retaining such portions of the diseased adnexa as judgment dictated and pathologic conditions allowed. Ardor operandi was superseded by ardor conservandi, a wholesome phase indeed in the history of the development of female pelvic surgery.

Within the past few years, however, there has been a reaction. It is now admitted that the field of conservative surgery is limited and that there are ideal and selected cases only on which conservatism should be practised. While we all advocate conser-

*Read before the Woman's Hospital Society, April 23, 1907.

vatism, we now realize that some ovaries are better left alone, or, that in hopelessly diseased conditions, it is not always wise to conserve. In fact, we may sacrifice too little. We note that cases on which conservative work has been performed have later presented themselves for secondary operations because of a recrudescence of the original lesion due to morbid changes unrecognized at the primary operation, or because of an attempt at the first section to save a portion of a hopelessly diseased structure. It is, therefore, with particular reference to necessary conservative ovarian surgery, with the absence of suppurative processes, that your attention is invited.

My interest was strongly directed to a consideration of this subject because of the necessity of reopening the abdomen in a number of cases within a year after primary section. Four cases out of twenty-one, because of symptoms occurring with special reference to the resected ovary, demanded interference, and in all four, the ovary which originally had been thoroughly resected almost to the hilum, was found to be the seat of increased cystic degeneration and much enlarged. That is to say, apparently, normal ovarian tissue was supposed to have been left in situ at the primary operation. Macroscopically it gave every appearance of healthy tissue. It can only be inferred that, microscopically, this apparently healthy tissue was already undergoing cystic degeneration, which the naked eye could not detect. My interest was further increased when I learned that other operators had had cases of resected ovaries return to them, and on reopening the abdomen they had found the resected ovary in a state of marked cystic degeneration. Of these operators, I recall particularly Drs. Charles Jewett, John O. Polak, and William E. Butler. My observations at that time were embodied in a paper read before the Brooklyn Gynecological Society, June, 1901.

Before drawing any conclusions, a brief mention will be made of ovarian histology and some of its pathology, reference especially being directed to the cortical layer under the tunica. In the cortex are developed the graafian follicles due to a process of involution of the germinal epithelia. These follicles, after maturation, gradually come to the surface of the ovary, and, there rupturing, discharge their contents at intervals, usually coincident with menstruation. It is these follicles retained in the ovarian parenchyma and stroma through the agency of diseased

conditions that have so much bearing on the future of the ovary.

This retention, I think, is due to one of two conditions—either a peri-oöphoritis, in which the covering, as it were, of the ovary, the tunica albuginea, becomes thickened from an inflammatory process which the ovary has either shared synchronously with the other adnexa, or which has developed in the tunic from circulatory disturbances in the ovary per se. Or the retention may be due to a thickened and sclerotic cortex from a deposit of new formed fibrous tissue, the result of previous inflammatory action in the ovary. From whatever cause, the effect on the follicle is the same. This, after ripening, comes to the surface, and if the ovary is normal the usual physiologic changes attend its rupture. With a thickened tunic or cortex, the follicle is not allowed to penetrate this outside layer, as there is not enough vis-a-tergo to extrude it. The follicle therefore rests, or better, is arrested. This follicle, or graafian vesicle, is filled with a fluid which is secreted from a lining membrane known as the membrana granulosa. The complete arrest of the follicle does not check the secretion of this membrane, which still continues, and with but one result, distention of the follicle from the constantly forming yet imprisoned secretion. This distention causes an interior pressure, no doubt, which affects the blight of the ovum and this perishes. The secretion still continues and the useless follicle distends in proportion, forming the classical follicular cystic degeneration seen in cystic ovaries. Such is the life history, I take it, of these arrested follicles, which may well be termed retention cysts, though the morphology is dissimilar.

The clinical picture presented at an operation is complete and familiar to us all. These cystic ovaries have a soft, pultaceous feel, are semi-fluid in consistency and on pressure exhibit a peculiar tense feeling. Cystic ovaries should not be mistaken for the chronic edematous ovaritis, in which condition the ovary is increased markedly in size, and its cut surface shows a "wet appearance." I can best describe its appearance in color by likening it to putty. Section reveals small cysts which are not follicles, but interstitial collections of fluid-pseudo cysts, and due to some derangement of the lymphatics. There is an absence of cyst wall, and when opened they entirely disappear. Personally I have seen this condition but twice.

It must also be remembered that in the normal ovary there are

always to be seen on its surface a few small follicles. This is physiologically due to the simultaneous evolution of a number of ovules. A tactus eruditus will easily differentiate between this and a true cystic condition. It is safe to assume that many such ovaries have been ablated. Too strong emphasis cannot be placed on the *presence of symptoms* sufficient to warrant interference in a slightly cystic ovary.

Palmer Findley, in a study of cystic degeneration of the ovary (AMER. JOUR. OBSTET., June, 1904) propounds some pertinent questions. He says, "Can normal ripe follicles constitute what is known as follicular degeneration of the ovary?" He quotes Nagel having us "believe that the distended follicles are always physiological." Findley says that numerous anatomical and clinical researches which have been made by competent observers prove the fallacies of Nagel's reasoning. He then dissects Nagel's opinions and justifies his own position by reviewing the opinions of Virchow, Gebhard, Abel, Klob, Ziegler, Ruge, Pfannenstiel, Amann, Martin, and Frakin, who are agreed that "follicular degeneration is the result of chronic ovaritis, and that these follicles do not arise from cell inclusions, as stated by Nagel, but are the result of passive congestion and hyperplasia of the stroma." This bears out my own contention. Findley examined microscopically one hundred and eighty cases of cystic ovaries and was astonished to note the scarcity of normal follicles which contained ova. In a few sections none were to be found, and in nearly all they were fewer in number "than would appear to be normal." In a small percentage of cases fresh corpora lutea were found, showing the ovary capable of functioning. This would possibly explain why a beginning and progressive amenorrhea is so often associated with cystic ovaries. A case of mine under observation for seven years bears out this theory to a marked extent. Findley reports no subsequent enlargement of these resected ovaries, but states that four of Dr. Webster's cases have returned for the removal of a cystic ovary five months to one and a half years after its original resection. Findley believes in operations on cystic ovaries provided there are symptoms sufficient to warrant their removal, such as pelvic pain, tenderness, dysmenorrhea, sterility, or general nervous phenomena, and says "only local discomfort justifies the sacrifice of part or all of the ovaries." He adds such cases are not common.

Boldt (AMER. JOUR. OBSTET., Vol. LV., No. 4) says: "A question of much importance is, *when* is an ovary in a sufficiently healthy condition to be retained? From the observations so far made I have answered the question to my satisfaction. *Ovaries, because they are the seat of small cystic degeneration, need not be sacrificed.*"

Knowing the opinions of other observers and realizing the pathological condition involved, also the chances of possible secondary operation, the gynecologist is often compelled to debate whether to ablate, or conserve, or let alone. It redounds to his credit that he usually acts honestly and attempts to save if possible. One of four operations may be elected. *First*, simple puncture; *second*, puncture of the cysts, curetting out the cyst wall, cauterizing the interior of the cyst or dissecting out the cyst wall, and finally whipping over the oozing ovarian surface should the hemorrhage warrant; *third*, excision of a wedge including the cystic tissue and approximating the cut surfaces by suitable coaptation sutures; *fourth*, ablation.

A critique of these methods would result, I believe, in a consensus of opinion as to the first, that it is absolutely unsurgical and analogous to tapping a hydrocele or an ovarian cyst, as the secreting membrane of the cyst wall still remains and will continue its function. Personally I have punctured and curetted for the last time. A few cases serve to illustrate my reasons for this statement. In one acute mania followed, another demanded a secondary operation, which disclosed the treated ovary even more cystic than at the original operation. Still another occurring during my service at the Woman's Hospital developed an ovarian abscess, while a fourth case, now under observation, after "treating" the ovary, had a protracted convalescence of many weeks, with pain in the ovary, which grew large and very tender. On sectioning her last May (for appendicitis), four years later, the ovary was seen to be markedly cirrhotic, but was left at the patient's expressed request. She later became pregnant. Other operators have expressed similar views regarding the clinical picture subsequent to "treating" an ovary, believing it better to excise a wedge. Contrary views are, however, expressed by Cesa-Bianchi (*Med. Review of Reviews*, Vol. XII., No. 8). He experimented on guinea pigs, rabbits, cats, and dogs. His results would seem to disprove the idea that surgical traumatism can affect the ovary.

He produced aseptic injuries and inflammations of these animals' ovaries, and also grafted, with the idea of producing cysts, and concludes that such procedures do not produce cystic ovaries. However, I am not yet convinced that the results of experimental work on animals wholly coincide with our clinical observations. I still believe that surgical irritation of the human female ovary may be sufficient to kindle new trouble and favor the development of retained graafian follicles into follicular cysts. This is but a surmise, for which I have no absolute proof.

R. L. Dickinson punctures small follicular cysts whenever he has an opportunity, and says he has no fear in so doing. He has never had an unfavorable result. L. Grant Baldwin has punctured many times with no unfavorable results. W. E. Butler prefers not to puncture any cysts. Boldt says: "The simple puncture of such cysts is, in my opinion, useless, because they soon fill again." Polak prefers excision of a wedge to puncture.

To return to my criticism of the methods employed in dealing with cystic ovaries, we come to the second, that of puncture of the cyst, curetting the cyst wall, cauterizing, and, if necessary, suturing. As regards this method if we take time to do all this, why not resect at once which occupies no more time and is a more perfect and satisfactory operation, both from a surgical and conservative point of view? Besides, in simple puncture, curetting and cauterizing we are not absolutely certain that all of the cyst wall has been destroyed.

But two methods, in fact, remain—excision of a wedge and ablation. Excision of a wedge is surgical, the operation retains the stamp of conservatism, and with only the smallest portion of the ovary left its function has not been impaired.

As regards ablation, I beg leave to assume the following statements: Take a cystic ovary with a fair amount of supposedly healthy tissue, enough, perhaps, to warrant its non removal, harden and section it, study it intelligently under the microscope, and the proof will be abundant that macroscopical pictures evident at the operating table do not coincide with later microscopical findings. It does not need sections of many different ovaries to prove this assertion. One ovary simply repeats the history of numerous others, and pathologists have demonstrated this to their own satisfaction from examination of slightly cystic ovaries which have been ablated and sent to them for a report. We have been told

that many of these ovaries contain very small cysts—microcysts—not discernible to the naked eye, which remain in apparently normal ovarian tissue which has been conserved. They are in a condition, in time, to produce the same lesions, and the same train of symptoms, as the large follicular cysts previously removed by exsection. They can enlarge so as to produce a typically cystic ovary. I have positively demonstrated to my own satisfaction the presence of these microcysts by the microscope and am satisfied of their actual existence. These microcysts are situated in inflammatory tissue and are simply graafian follicles of small size. The membrana granulosa has lost its typical character, and the ova have either disintegrated or have been destroyed by the inflammatory process or from pressure. In short, they are graafian follicles with a hyperplastic cyst wall and minus healthy ova, too small to be detected by ocular inspection and best seen with a low power objective. Since studying the character of these cysts I am more of the opinion than before that in badly cystic disease, with symptoms, it is not conservatism to excise wedges and attempt the saving of the ovary, but that ablation is the better alternative.

Now the question of either excision of a wedge to conserve the ovary or ablation will largely be determined by two conditions—first the age and social condition of the patient, whether young or a virgin and the possibility of children; second, the proximity or complete cessation of the menopause.

If near the menopause, and recognizing the retrogression changes incidental to the ovary at this period, and also recognizing the fact that ovulation will cease and atrophic conditions occur which will probably limit further distension of any existing follicular cysts or the formation of new ones—recognizing these phenomena—the operator can afford under such conditions to adopt a let-alone policy, and give Nature an opportunity to effect a cure. At such a time, if operation be demanded, I believe follicular cysts may be excised with safety, as the atrophic changes occurring in the ovary will act as a preventive to further pathologic formation.

But it is in cases of young unmarried women with future prospects, or sterile or recently married women desirous of children that the difficulty of election of operation and technic arises. We desire then to preserve all that is possible. With one badly cystic

ovary and the other sound, ablation of the diseased ovary is fully warranted. If both ovaries are hopelessly cystic and there are pronounced symptoms, I still believe in ablation and not attempting conservatism unless at the express wish of the woman that some portion of one or both ovaries be saved.

As regards the possibilities of conception after conservative ovarian work, Coe says that out of four or five hundred cases he can recall but half a dozen women only who became pregnant after resection. He says he has always been skeptical about the statements made in regard to the frequency of this result. He conserves ovaries to avoid climateric disturbances and not with any idea of possible procreative function. In Hunter Robb's series of 419 cases not a single pregnancy is reported, nor in L. Grant Baldwin's series of 99. Dickinson in 50 reports no pregnancies, nor does Jewett in 67. The latter believes not more than 5 per cent. become pregnant and thinks conservative ovarian work unfavorable as regards future pregnancies. In Polak's 200 cases 20 pregnancies are reported. One of these is interesting. One ovary was entirely and the other three-quarters removed, but a fringe being left. This was tacked up to the tube and in ten years she has been pregnant three times. W. E. Butler reports but one pregnancy in 50 cases. Out of my 21 cases one became pregnant.

After all, in conservative work we aim especially to avoid the nervous phenomena of an artificially induced menopause. That the preservation of a small portion of one ovary, the other being removed, will combat the hot flashes, neuroses and other reflex disturbances so common in castrated females, is well known, but are we not dropping back an ovary which in the future will generate further trouble? A. W. Johnson said that there is no proof that the ovary has any other function than the manufacture of eggs, and that it is in no sense a gland and cannot be compared with other glands. He thinks the nervous phenomena of the menopause are not due to lack of secretion, and that there is no proof that disorders of the menopause are caused by absence of this internal secretion. (I might here add that I employed ovarian extract in many dispensary cases, in which both ovaries had been ablated, and in only one did I notice any results.) Johnson further cites one case to prove that the ovary has little influence on the development of women. He removed both ovaries of a girl of eleven years of age for cystic disease and, notwith-

standing, she went on to a perfect development. He condemns the practice of preserving a part of the ovary and tube as simply a postponement of the trouble (*Phila. Med. Jour.*). Kelly says that conservative work at its best is discouraging.

Reed says in doing conservative work that such measures should only be practiced with the knowledge and consent of the patient, who should be informed frankly of the liability of failure, and of the probable necessity of subjecting herself to a second and radical operation before she can be restored to health. He further states that he has repeatedly excised cysts of the ovaries, stitched up the incision, and dropped the ovary back. "The results of these operations have not always been satisfactory and no guarantee can be given the patient that she will be free from pain." In six such cases operated on by him all applied for relief before the expiration of three months for radical removal of the organ.

Many a surgeon has halted during an operation and asked his colleague, "Shall I remove this ovary or not?" Pozzi remarks that "upon the multiplicity of these follicles and particularly upon their volume, and upon the concomitant lesions, our judgment of the morbid condition should be based."

Sentiment in some women plays an important part in the restrictions placed upon the operator. Oftentimes he is pledged not to remove anything or to save something. In the latter case he can excise a wedge and close the abdomen. Other women have no hesitancy in saying that they do not mind whether their ovaries are left or not, provided an operation cures them of their pain. In such cases the way is clear with badly double cystic disease. Still other women, while they prefer preservation of the ovaries, are willing to defer to the operator's judgment as to the responsibility of removal or not.

If it were possible to demonstrate satisfactorily at operation whether the apparently healthy portion of a badly cystic ovary were the seat of microscopical cysts which, if left, would produce further cystic disease, there would be little hesitancy in ablating such an organ. In cases where cystic ovaries are buried in inflammatory exudates and conservative work is performed, no surgeon can guarantee the future status of such an organ. He knows he is taking chances in dropping back an ovary conserved under such discouraging conditions. "Persistent symptoms" is a

term which best expresses the subsequent condition on their return.

The influence which largely determines our choice of exsection rather than ablation in double cystic disease with symptoms in young women is not so much loss of their ovaries and procreative power as it is that we subject them by the early induction of the menopause to all the severe nerve storms which accompany extirpation. While the aim of every surgeon is to save and not to mutilate, do we not infinitely add to a woman's discomfort when by conservatism practiced on hopelessly cystic ovaries we perhaps subject her later to a secondary operation for the relief of a condition which she supposed was forever gone after the first section? Do we go far enough in such cases?

It is well known that there is no proof that the sexual function is destroyed after double oöphorectomy. In fact, some patients report an increase. The general system is better influenced within certain limits by the removal of two badly cystic ovaries, provided symptoms warrant their removal. It is a popular fallacy that a woman, after loss of both ovaries, becomes gross and acquires a masculine voice and a hairy face. All of us have data to disprove such erroneous ideas. Intrapelvic conditions are always modified if not cured by ablation, but menstruation is arrested and the menopause precipitated. On the other hand, every surgeon has seen the unusually severe nervous phenomena following total ablation and can appreciate what some women suffer. Their neuroses range from mild neurasthenia to acute mania, from depression to acute melancholia. Digestive disturbances are common, while the hot flashes followed by the sweats are at times a source of embarrassment.

Ely Van de Warker remarks: "A woman's ovaries belong to the Commonwealth. She is simply their custodian." He says he has yet to see a woman made better by the removal of her ovaries, and thinks from his after results that "the ablation of so-called diseased ovaries was the result of a blunder in physiological surgery." He thinks (AMER. JOUR. OBSTET.) gynecologists know nothing of sexual physiology and that what we do know of the ovaries is from clinical experience only. He believes small multiple cysts of the ovary do not appear to give rise to any symptoms, and that thousands of ovaries have been sacrificed on their account. He quotes Coe as saying that "the reaction against

the wholesale extirpation of normal or slightly cystic ovaries which occurred many years ago was succeeded by a general resort to conservative surgery, which though a long way in advance was itself carried to extremes. The same ovaries which were formerly removed were now punctured, burned, resected, and otherwise tampered with, when, as we now know, they had better be let alone."

Reed, in writing of conservatism and radicalism in gynecology (referring to the swing of the pendulum from promiscuous ablation to marked conservatism), says: "Reactionary tendencies may go to dangerous extremes. This is sometimes exemplified in an effort to conserve an organ at the expense of the general health of the patient. On this point it is well to be governed by the rule tersely enunciated by Dr. Seth Gordon, that conservative gynecology demands saving health rather than diseased and useless organs."

I have endeavored to present all sides of this question. Realizing that the opinions of other operators as to recurrences would prove interesting and add to our present knowledge, I mailed a circular letter to many men of wide experience. The results compiled from their replies are here appended. A few asked for more time in which to look up their records. Some wrote that they had had no experience whatever in this line of work, and from five no replies were received.

Hunter Robb (AMER. JOUR. OBSTET., Feb., 1907; no letter sent) reports a series of 419 cases, in which 572 ovaries were operated on conservatively. He reports ten secondary operations for relief of recurring symptoms in the same ovaries, with thirteen cases under observation for pelvic discomfort. In ten of the latter symptoms disappeared within a year and three are still complaining. Nothing is said as to whether in these thirteen cases the symptoms were referable to the ovaries or not.

L. Grant Baldwin reports a series of 99 cases of conservative work on the uterine appendages, with one case only returning within a year for removal of a previously conserved ovary because of recurring symptoms.

Charles Jewett reports a series of 67 cases in which 6 returned for secondary operation.

Boldt says he can recollect "four instances in which he found it necessary to reopen the abdominal cavity." Two of the patients

had ovarian cysts of considerable size, and in the other two cases the ovaries were simply in a state of chronic inflammation, somewhat larger than they were at the time the abdomen was first opened. In the latter cases the ovaries were cystic at the first operation. He adds, however, that "nothing in the way of surgery had been applied to any of the patients at the time of the first operation."

Brothers can only recall "one or two" cases out of many requiring secondary operation.

Clement Cleveland, William S. Stone, Janvrin, R. H. Pomeroy, and John Aspell report no cases. J. O. Polak has done conservative work in nearly two hundred cases, and thirty-one required secondary operation. He says that much of his work has been successful in preserving the ovarian function and twenty of his cases became pregnant. "On the other hand, much of it has been a dismal failure in alleviating the ovarian symptoms." He has come to believe that the only cases in which conservatism gives good results are those in which the ovary is the seat of a single good-sized cyst. Where the cystic degeneration is general, even when a large portion of the ovary has been resected, leaving nothing but the hilum, recurrence has been his experience.

R. L. Dickinson in fifty cases reports four secondary operations and no pregnancies. He says he has no fear of puncturing an ovary to "treat" it, and does it constantly, with not one recurrence.

Howard Taylor in forty-four cases of resected ovaries remembers operating a "number of times for the cystic condition that sometimes follows a resection."

J. Riddle Goffe reports but one case of secondary operation in which the resected ovary was found to be cystic and also containing pus.

Joseph Brettauer says the number of cases in which he has done conservative surgery is very small and in no instance has he been obliged to reopen the abdomen.

Albert M. Judd writes that he has operated conservatively on the ovaries fifty times, with two recurrences. All were ward cases, because, as he says, he did not care to do conservative work on private patients, knowing the possibility of recurrence. He does not know how many of the other forty-nine have come into

the hands of other operators, and so does not know the per cent. of recurrences.

I wrote Dr. Kelly some four years ago, and in his reply he stated that he had, up to that time, not reopened the abdomen because of return of symptoms after a resection of the ovary.

Brooks Wells writes: "I have seldom had any permanent trouble following resection of the ovary, although I have had a large number of cases, yet I have grown increasingly cautious when it comes to leaving any portion of a tube or ovary." In a recent discussion on this subject in the New York Obstetrical Society he said he believed in conservative work, but that the patient should be informed as to the scope of the operation and the chances she runs for a secondary operation.

J. Dougal Bissell, in a series of "several hundred cases," reports only two secondary operations. In one case the ovary was found "to be hard, nodular, and firmly imbedded." In the other the conserved ovary was "cystic and three times the size of a normal ovary."

H. C. Coe reports about twelve cases of secondary operation in an unnumbered series.

H. Grad reports one case in which both ovaries were resected, Two years later he had to section the patient for appendicitis, and on examining the uterine adnexa found on the right side a small ovarian cyst, while the left ovary was ten times the size of the piece left two years previously.

W. P. Pool reports one case of resection which three months later returned and was reopened; originally only half the ovary was left. This was found to have developed into a small cystoma. In one of Polak's cases the resected ovary was found, at the secondary operation, to have developed into a cystoma the size of a lemon.

Bache Emmet writes that he has had a number of secondary operations following resection, but cannot recall the exact number. In all his cases he resected what "appeared to be most diseased" and left "as much as appeared healthy." Nearly all the recurrences were "mainly one cyst development," the ovary was much increased in size, and monocystic.

George McNaughton, in an unnumbered series, not over fifty cases, has had six recurrences and no pregnancies. He has ceased "treating" ovaries, as he has had trouble following such pro-

cedure. He says he cannot tell accurately whether the six recurrences represent all, as he has lost track of some of the others which might have found their way into other surgeons' hands.

To epitomize:

The microscope has demonstrated the presence of so-called microcysts in ovarian tissue apparently healthy to the naked eye.

Hopelessly diseased ovaries with symptoms present, I believe, are better ablated, unless at the direct request of the patient that a portion of either ovary be saved.

Pregnancy does not occur as often as thought, not more than 5 per cent.

An artificially induced menopause is avoided by conservative work, but this is the only result that conservatism can positively promise.

There is no consensus of opinion among gynecologists as to the future of a conserved ovary. Many believe it doubtful. The operator takes a chance in dropping back a conserved ovary. Selected cases are ideal, that is, where the ovary is the seat of a monocyst.

All patients should be told of the possibility of a recurrence.

Slightly cystic ovaries should be left alone, unless there are symptoms present, as pain, dysmenorrhea, or nervous phenomena. Excision of a wedge is preferable to the so-called "treating an ovary."

Incomplete records show that not more than 5 per cent. return for secondary operation.

In conclusion it is evident we lack complete records. The compilation of such a set of statistics rests on an insecure basis, because many women who have had conservative work on their ovaries and who may present themselves for secondary operation might not return to the original operator. In this manner accurate histories are lost. We need percentages to establish a successful theory. We wish to know how many women out of every hundred or thousand require secondary operation, and after what period of time. All we now know is that there are recurrences and that conservatism prevents a premature climacteric.

There are many mooted points presented in this essay. I do not wish to assume a too arbitrary position, although I have a definite personal opinion which perhaps is not shared by many. While positive conclusions cannot be deduced, the results are not

entirely negative. No dictum has been established. Whether we excise or ablate, or let alone, depends on the particular surgeon. We all have our own views of this question. Theories, statistics, discussions, or literature have little weight as opposed to any one surgeon's judgment, which alone dictates sacrifice of an ovary or its conservatism. But no operator can assure himself that after conservative work later interference will not stare him in the face.

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Medical Review of Reviews, Vol. XII., No. 8.

126 JORALEMON STREET, BOROUGH OF BROOKLYN.

PUERPERAL ECLAMPSIA, WITH REPORT OF CASES.*

BY

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AT the meeting of this Society in December, 1902, the reader presented a paper on "Puerperal Eclampsia," considering at some length the etiology and treatment, and reporting nineteen cases. The paper to-day presented is intended to be supplementary to the former report, and I propose to review briefly the progress of our knowledge both as to etiology and treatment, during the past three years. I have to report a second series of thirty-seven cases, making with the cases already reported a total of fifty-six.

Much has been written of late regarding puerperal eclampsia, and yet with all the considerable amount of investigation and experimentation with a view to the etiology, but little real advance has been made since the last report.

Zweifel reported in 1904 certain observations which he had

*Read before the Rhode Island Medical Society, March 1, 1906.

made, and concludes that the disease is due to a poison formed within the maternal organism, and circulating in the blood. He believes that this poison is an organic acid which may be oxygenated, and failing this, produces eclampsia, and he suggests that lactic acid may be the acid which produces the eclamptic symptoms.

Ewing of Cornell has devoted a considerable amount of study to the pathology and etiology of eclampsia, and the allied toxemia of pregnancy. In an exhaustive report in 1905 he calls attention to the frequency of changes in the liver in fatal cases of eclampsia, these being found in 95 per cent. of all eclamptics. He believes that the disease is due to a functional disorder of the liver, with lesions in its substance, and that the other symptoms are sequences rather than precursors.

It has been suggested that the morbid process was due to a failure of the normal hypertrophy of the thyroid gland, during pregnancy, and a consequent deficiency in the internal secretion of this organ. It has been observed that the majority of the patients having eclampsia do not present enlargement of the thyroid as is usual in pregnancy, and one writer states that in twenty out of twenty-five cases in which thyroid hypertrophy did not occur, albumin appeared and convulsions developed. This theory has, however, not been sufficiently studied as yet to be accepted as absolutely true, and indeed clinical results have not in all cases borne it out.

Another purely theoretical view of eclampsia was suggested by Veit, to the effect that the disease was due to a freeing of the syncytial elements and their presence in the blood. Experiments carefully made have not confirmed this view, and most writers have rejected it.

In the former paper acetone was suggested as possibly the causative factor, but during the past three years but little has been written of this, and it is no longer considered as having any relation to the disease.

This brief of new suggestions as to the etiology of eclampsia will show at once that but little real progress has been made. We have for some years believed that the condition was due to a toxin, but we are still as much in the dark as to the nature of this toxin as we were five years ago. We may state, however, that it is probable that the toxin is of fetal origin, that it cir-

culates in the maternal blood, and that it irritates the nerve centers, causing the convulsive seizures. The very multitude of the theories indicates, however, how great is our ignorance as to the true nature of the condition.

We should scarcely expect that any new observation should be made as to the symptomatology of a disease known and studied so carefully for so many years. We have, however, had our attention called to the leucocyte count in cases of puerperal eclampsia. But little has as yet been written upon this subject, and the first article which I have seen was by Lobenstein, in August, 1904. He concludes from the observation of fourteen cases that there is a leucocytosis in eclampsia, varying in degree, according to the severity of the case, or in other words, the toxicity of the patient. Our own observations in eight cases at the Lying-in Hospital, begun, it may be added, nearly a year prior to the publication of Lobenstein's paper, are in accord with his conclusions. Every one of our cases in which a white count was done showed a leucocytosis. The question naturally suggests itself whether this is due to the convulsions, or rather to the toxemia. My own observations in one case of toxemia without convulsions inclines me to regard the toxemia as the true cause of the high white count. One writer has stated that the majority of cases occur in the winter months. This is not our experience, however. Of the thirty-seven cases here reported, fourteen occurred during the six months, October to March, and twenty-three in the summer months.

Several writers have stated that the blood pressure is very greatly increased in eclampsia, especially in the postpartum cases. The cause of this is either a change in the quality of the blood, or a vasomotor disturbance. We have made no observations as to this in any of our cases, although many of them presented a so-called tense pulse.

Treatment.—Certain new methods of treatment have been suggested since the last report, but none of them have borne the test of time and experience. Edebohl, in his enthusiasm for his operation of renal decapsulation, suggested this operation for eclampsia and reported several cases with a very small mortality. It would seem evident, however, that this radical procedure was not based on the accepted theory of the dis-

ease. If the condition is a general toxemia with local evidences in the kidney, simply as a concomitant part of the symptom complex, it could hardly be expected that any operation on these organs could relieve the general condition and as a matter of fact the operation has not been received with favor by obstetricians.

Lumbar puncture was employed by Henkel in 1904, in a series of sixteen cases. This procedure was advised on the theory that the convulsions were due to an increased intracranial tension. The mortality in these sixteen cases was not materially lower than the average mortality in the same clinic, and Henkel states as his opinion that the quantity of cerebrospinal fluid is in very slight degree a causative factor in the production of convulsions.

Upon the theory that the deficiency in the internal secretion of the thyroid gland is the cause of eclampsia, several observers have treated these cases with thyroid extract. In one series of forty-one cases, reported by Sturmer, the mortality was only 12.2 per cent. This treatment is, however, as already observed in regard to the theory itself, still *sub judice*. It has at least some hopeful points.

Cesarean section has been advised for the relief of this condition, but has not received favorable comment. When it is considered that the patients suffering from eclampsia are in a condition of poor resistance and in most cases not well prepared to withstand the shock of an abdominal operation, and moreover that this operation is simply a means of delivery which can in the vast majority of cases be better done *per vaginam*, the reason for the lack of favor extended to this method of treatment will be apparent.

For several years much stress has been laid upon the advantage of the use of saline solution, either by rectum or subcutaneously, or intravenously, in the treatment of eclampsia, and nearly all of the cases here reported have been given saline in some one of these ways. We have felt very sure that it was a most valuable method of treatment. Within the past two years, however, attention has been called to the value, in the treatment of renal disease, of the withholding of chlorides. Several writers have observed that there is an inverse relationship between the excretion of chlorides in the urine and the

development of edema. As a result of these operations it has been stated that saline solution tended to increase the dropsy rather than to decrease it. If this be so, inasmuch as practically all cases of puerperal eclampsia present edema, the question arises whether or not the administration of saline is the right procedure. So far as I have seen, nothing has been written upon this phase of the subject. It is possible that the edema of ordinary nephritis and that of eclampsia are not identical in causation. If such be the case, the theory of dechloridation would not apply to the last condition. Here is evidently a field for further study. My own feeling is that with our present knowledge of the subject we should be on our guard against giving an excessive amount of saline to these patients. A moderate amount may do good, by diluting the toxins, without danger of increasing the edema. And as a matter of fact in all our cases in which saline solution has been administered, the edema has very promptly disappeared. This would tend to show that the saline did not in these eclamptics increase the dropsy, or do any real harm.

Most writers still insist upon immediate delivery, manually if necessary, as the most important single method of treatment. Herman, however, still adheres to his former opinion that absolute non-interference is the best policy in all cases and quotes statistics which apparently bear out this view. His radical opinion is not, however, shared by any other writer of note. As an aid to the rapid dilatation of the cervix, the Bossi dilator has been strongly recommended. This is a four-bladed instrument which when introduced into the cervix may be so manipulated as to make pressure in four directions simultaneously, thus reducing the risk of severe laceration. It is, however, a most powerful instrument, and for that reason its use has not been adopted so universally as was expected when it was first introduced, and most obstetricians now prefer to dilate the cervix by means of the hand, which is sensitive, and which can be used in a much more delicate way than is possible with any mechanical device.

The cases here reported were all treated at the Providence Lying-in Hospital, and, as is often the case in hospital work, several of the patients were in extremis on entrance. Others of them were not sent to the hospital until the convulsions

had been occurring for some time. These facts will serve in a measure to explain the high mortality. The cases were in no-wise selected cases. I have included in this report only those cases in which convulsions actually occurred. We have had under our care at the hospital a considerable number of patients presenting symptoms of toxemia, more or less pronounced, but these I have purposely omitted because they are not so seriously ill, and under careful treatment nearly always recover. I have notes of thirty-seven cases, observed since December, 1902. These thirty-seven cases occurred in 883 labors, or one case to each 23.8 cases. Of these, thirty, or 81.1 per cent., were married, and seven, or 18.9 per cent., were single. Twenty-five, or 67.5 per cent., were primipara, and twelve, or 32.4 per cent., were multipara. The average age was 27.2 years. Of the thirty-seven mothers, twelve died, giving a mortality of 32.1 per cent. Of the thirty-four children living in utero at entrance, fourteen died, a mortality of 41.1 per cent. Three were macerated when delivered.

Convulsions occurred as follows:

Antepartum 20—54 per cent.

Postpartum 8—21.6 “

Interpartum 9—24.3 “

The mortality in each class was as follows:

Antepartum 8—66.6 “

Postpartum 4—33.3 “

Interpartum None.

There was one case of twins.

In nineteen cases, or 51.3 per cent., the convulsions ceased with delivery. In four cases they seemed to increase in severity. In the twelve fatal cases the average number of convulsions was twelve. In the twenty-five nonfatal cases the average number was 4.6.

The statistics regarding the total fifty-six cases observed up to the present time are briefly as follows:

Married 45—80.3 per cent.

Single 11—19.7 “

Primipara 34—60.7 “

Multipara 22—39.3 “

Average age 27.1 yrs.

Maternal mortality 17 or 30.3 “

Fetal mortality 16 or 31.3 “

Total number of deliveries, 1,577, or one case in every 28.1 cases.

Convulsions:

Antepartum 33—58.9 per cent.

Interpartum 13—23.2 "

Postpartum 10—17.8 "

Mortality:

Antepartum 12—70.5 "

Interpartum None.

Postpartum 5—29.5 "

Convulsions ceased on delivery in thirty cases, 53.6 per cent.

Nearly every case was delivered manually as soon as possible after entrance.

I am indebted to my colleagues on the visiting staff for allowing me to report cases occurring in their services.

242 BROAD STREET.

POLYCYSTIC LUTEIN DEGENERATION OF THE OVARIES.

BY

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New York.

(With two illustrations)

ABOUT twelve years ago Marchand and L. Fraenkel first drew attention to the striking frequency of cystic degeneration of the ovary in cases of hydatid mole.

In 1901 Stoeckel deduced from a careful histological study of a number of collected cases that these cysts were the product of increased activity and proliferation of the lutein cells. It remained for Ludwig Pick of Berlin in 1903, in his classic article "Zur Frage der Eierstockveraenderungen bei Blasenmole," to definitely establish the fact that here was a new, distinct pathological entity. He suggested for it the name "degeneratio polycystica ovariorum luteinalis."

Thus far this very interesting condition of the ovary has been found only in cases of hydatid mole and chorioepithelioma. Moreover, in every case of either of these two morbid manifestations of the excessive activity of the chorionic epithelium, in which the

ovaries were subjected to microscopic examination by Pick, Runge, and Stoeckel (working independently), this polycystic lutein degeneration was invariably present. In some cases it was unilateral and in others bilateral.

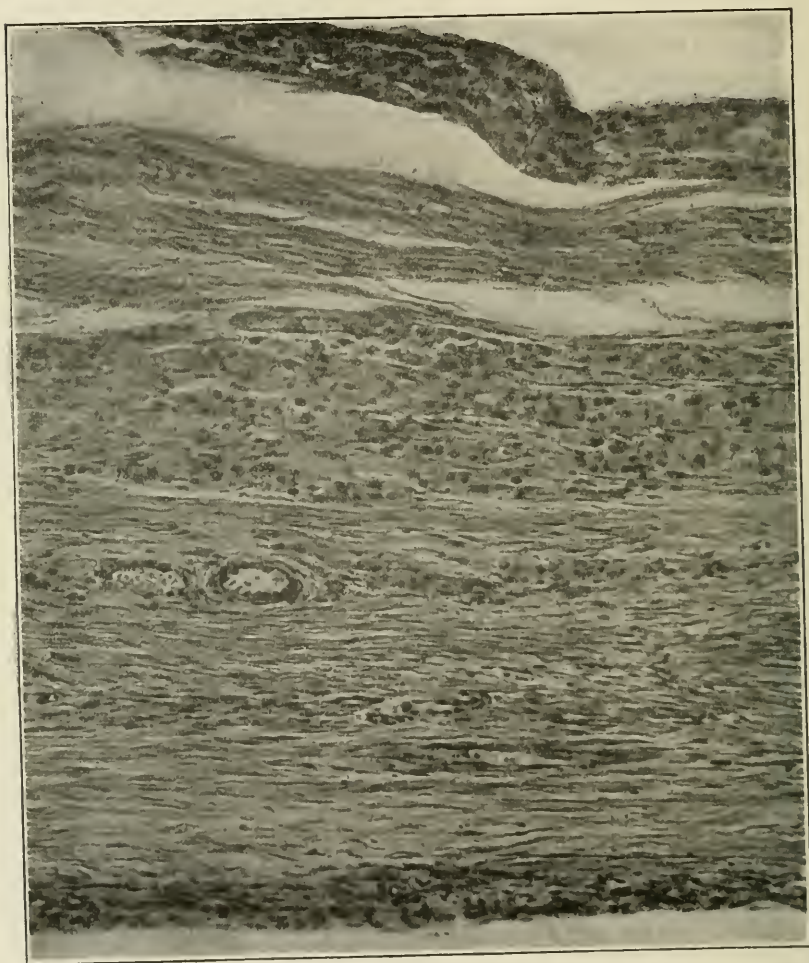


Fig. 1.—Polycystic lutein degeneration of the ovary. From a case of chorioepithelioma of the uterus operated at the Landau Frauenklinik in Berlin. Low power, hæmalaun eosin. This section shows all three layers of the wall of a cyst. The lutein cells are seen forming the lining membrane and scattered through the connective tissue. The separation of the lining membrane from the underlying tissues is an artefact

Wherein do these changes in the ovary consist, and what is their significance?

Briefly, the organ is converted into a series of larger and smaller cysts. The gross appearance is that of an ordinary multilocular cystoma. The ovary may be only very slightly increased in size, or in exceptional instances, as in the truly remarkable case described by Stoeckel, it may even attain the size of the head of an adult man. In a typical case the individual cysts are about the size of a walnut. They are bunched together very much like a cluster of large grapes without stems, the whole organ being as



Fig. 2.—The same as Fig. 1, more highly magnified, showing the character of the cells of the lining membrane more distinctly.

large as an orange. The surface is somewhat opalescent. On section there is the same opalescent appearance, closely resembling a multilocular cystoma, with partial disappearance of the septa and fusion. Usually the stroma has been entirely crowded out, although it may still be in evidence even to the naked eye. The cysts have frequently a thin, purely serous content, with an adherent not characteristically colored lining. There may be a distinct fine yellowish-brown lining membrane, however. The

well-known macroscopic appearance of a corpus luteum has entirely disappeared, and only the microscope reveals the presence of lutein cells, and the true significance of the changes present.

Microscopically, all the tissues are found to be more or less edematous. If any ovarian stroma remains there are lutein cells scattered throughout it, singly, in connected or isolated strands, or in small heaps. The wall of the cysts may, for convenience of description, be divided into three layers. Passing from within the lumen outward we find first, lining the cyst, a layer made up of many rows of large cells; their size varies from 15-20 microns; they are mostly round, but may be cylindrical or cubical. The cell-body is pale, rather faintly stained with eosin, and often of a somewhat yellowish hue. The nucleus is round, large, stains quite deeply, and is mostly in the center of the cell.

From this description it will be readily seen that these cells are to all intents and purposes identical with lutein cells, with the single exception that they may be a trifle smaller, a fact readily explained by their being subjected to the increased pressure of the accumulating cyst contents.

Outside of this cellular layer is a layer of loose connective tissue, often markedly edematous, made up of moderately long fibers crossing in all directions; this layer is rich in blood-vessels, and scattered through it here and there are lutein cells, either singly or in groups. They may extend from the lining membrane into this connective tissue layer in strands, or they may be heaped up into isolated groups, structurally resembling carcinoma simplex.

Thirdly, we have the outermost layer forming the enveloping capsule of the cyst. This consists of long, wavy fibers of dense connective tissue; it is very similar to, and practically continuous with, the tunica albuginea of the ovary.

These three layers, lining of lutein cells, loose connective tissue rich in blood-vessels and containing lutein cells and outer dense fibrous layer, are by no means always so sharply differentiated. Often the entire cyst wall is greatly thinned out, and consists only of a lining of one or two rows of lutein cells and a thin connective tissue capsule. In several of the cases studied by the above-mentioned observers, the ovary on superficial examination was either apparently normal, or showed very slight cystic changes such as are so commonly met with in the well-known microcystic degeneration, and only the microscope revealed the true nature of things—a typical polycystic lutein degeneration.

It is a curious fact that while this condition has been one of absorbing interest to pathologists and abdominal surgeons on the continent for a number of years past, and already a very fair number of positively authenticated cases are on record, the subject has been all but overlooked in America. No mention is made of a distinctive cystic condition of the ovary in cases of hydatid mole or chorioepithelioma in the American text-books, and an extended search of the literature has failed to reveal a single case recognized as such and verified by microscopical examination. I have, however, come across two published cases which are so extremely suggestive of having been unrecognized polycystic lutein degeneration that it seems well worth while to recount them here, especially as this may serve the useful purpose of indicating the line along which future observations are to be carried out.

The first is a case of hydatid mole reported by Kreutzman in 1898. After the removal of the mole from the uterine cavity a large cystic intraabdominal mass was felt on bimanual examination. Because of this a laparotomy was done and *both ovaries were found converted into cystic masses* the size of a normal kidney. These were removed after ligation of their pedicles. Unfortunately no microscopical examination was made.

The second is a case of chorioepithelioma of the uterus developing after the expulsion of a hydatid mole and subsequent repeated curettage for persistent metrorrhagia. This case was reported by Ladinski in 1902, who did a panhysterectomy for the chorioepithelioma, in the course of which *bilateral ovarian cystomata* the size of a fist were encountered. No microscopical examination is reported.

In view of these facts it would seem highly desirable to have more light shed on this still somewhat obscure subject, and there devolves upon the surgeon the strict duty in every case of hydatid mole in which it is feasible, and in every case of chorioepithelioma which comes to operation or autopsy, to place a whole or part of the ovarian substance into the hands of a competent pathologist for careful study. Even if the ovaries seem quite normal on inspection, or if they have the typical appearance of microcystic degeneration or simple cystoma, the crucial test of the microscope should be applied; for in this, as in so many other important conditions, it alone must of necessity be the last court of resort.

This whole subject, rich in suggestion, opens up the view to a train of interesting possibilities. While these must of necessity be

limited for the present to the realms of speculation, they promise to be productive of much knowledge of positive value in the future.

Does polycystic lutein degeneration of the ovary occur under any other circumstances? At present we can only say probably not. Is it always a concomitant of hydatid mole and chorioepithelioma? This question can only be answered after a much larger number of cases have been studied; it would seem probable that it is. Finally, what is the real inner significance of this marked overproduction of lutein substance? Is it not conceivable that the lutein cell has a specific highly differentiated function which, when manifested to an excessive degree, exerts that etiological influence upon the chorionic epithelium which causes it suddenly to take on such baneful and rapidly malignant characteristics? In other words, does the lutein substance physiologically influence or control the growth and functions of the Langhans cells and syncytium?

It can hardly be styled far-fetched to presume that there may be some such intimate relationship. Be that as it may, the positive fact remains that these changes do occur hand in hand. To quote Pick, "Certain it is that in chorioepithelioma and hydatid mole a definite change is to be found in the ovaries, or, generally speaking, an overproduction of lutein substance."

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HYOSCINE ANESTHESIA IN OBSTETRICS.

BY

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DESPITE the discouraging reports of early observers, the new method of securing anesthesia in obstetrics is being widely tested and rapidly coming into favor. The most important report that has yet been made is that of Gauss, assistant to Prof. Kroenig, Director of the University Women's Clinic at Freiberg. This report gives statistics of 1,000 cases.

The object sought is the production of a peculiar state of half-narcosis known as *Daemmerschlaf*, or twilight-sleep. From this the patient may be awakened at any moment if desired, but does not retain recollection afterwards. The method has proved abundantly satisfactory in giving relief from the labor pains. A still greater value is found, however, in the prevention of nervous and mental disease in the mother, by sparing her the psychic traumata of childbirth. These are known to be the chief exciting causes of nervous and mental diseases in women, besides being an important factor in marital unhappiness and race suicide. If these claims are substantiated we can scarcely afford to neglect any means by which they may be accomplished.

Gauss insists upon the importance of absolutely pure alkaloids. Scopolamine is apt to be contaminated with bodies which seriously modify its action. This seems to be not the case with hyoscine derived from *hyoscyamus*. Whether the two be therapeutically identical or not, it has been found that hyoscine, although much more expensive, can be readily obtained in a state of chemical purity, to which very little of the scopolamine in the markets approximates.

The first injection is given when the pains become really severe, and consists of three to four decimilligrams of hyoscine, with one centigram of morphine. Half an hour later the patient is shown some test object, and in thirty minutes more is asked if she remembers what was shown her. On this Gauss lays stress, since

the capacity to remember regulates the dosage, rather than the cries of the patient which are less significant. When the patient remembers the test object a second injection is given of scopolamine alone, unless the pain is excessive, and only then is the morphine repeated. Usually four injections suffice, at intervals of not less than one hour, generally two to four hours, the total dose of hyoscine averaging three-fourths of a milligram, the highest total dose being 1.2 milligrams. The ears are stopped to exclude noise and the cries of the child are not permitted to reach the mother.

The secrets of success lie in the choice of good, fresh preparations, beginning with small doses, and careful testing of the memory power as a means of regulating the doses. The causes of failure are, forcing the effect by large doses too often repeated, beginning the process too early in the labor, or leaving it until there is not sufficient time for the effect to develop; or, finally, regulation of the dosage by the patient's cries.

Observations on the first 500 cases showed that in 451 the uterine pains were not affected, in 8 they were weaker, and in 36 stronger than before the injection. In the 8 cases too much morphine had been given. Gauss denies, therefore, that the duration of labor is excessively prolonged, as stated by Hocheisen.

In 444 cases the abdominal muscles acted spontaneously, in 16 only when stimulated, in 38 badly. In the second five hundred cases better results were obtained by excluding morphine after the first dose. The percentage of cases requiring operation was the same as that reported from the Berlin Clinic without this anesthetic.

In regard to the effects on the mother, Gauss found the women complain of thirst as hyoscine lessens mucous secretions. No bad results ensued. There was no vomiting unless this had commenced before the injection. Dizziness was rare, headache, diarrhea, and constipation almost never occurred. Hallucinations and delusions of transitory character were occasionally noted.

In the second 500 cases 23 of the women had heart disease, but of these none had a cardiac attack. Sometimes scopolamine gave rise to alarming rapidity and irregularity of the pulse, especially where too much scopolamine had been given. The symptoms, however, were not sufficient to cause alarm. In this country the addition of cactin seems to obviate any danger in this direction.

Examinations of the urine failed to show that any tendency to

nephritis was aroused; in fact, cases already albuminous generally improved after the injections. Of the first 500 cases three had eclampsia, one commencing before the injection. All three recovered. Of four other cases occurring in the district, without hyoscine, three died.

No effect on the secretion of milk could be detected.

As to the infant, Gauss declares that hyoscine does the child *in utero* no injury whatever. Of the five still-born, he attributes one death indirectly to the injections, because the child was born so easily that the attendants did not notice it, and it was found dead. No reason is given to indicate that the death was due to any direct effects of the drugs. The children often show a peculiar intoxication, most frequent when the morphine has been repeated. Respiration is slow, with cyanosis, for about twenty minutes if not treated, when normal respiration is established. The heart action slows during the intervals of respiration. At first these children were treated as though asphyxiated, but this was found to be unnecessary. Light massage of the heart was the treatment recommended. Of the first 500 children 65 were born asphyxiated, of which cases 47 were easily explained otherwise. In 18 no satisfactory explanation was found, but there was no evidence that they were due to scopolamine-morphine. In some cases the mother was not yet under its influence when the child was born, and in all the symptoms of scopolamine intoxication were wanting. Five of the children died, two of aspiration pneumonia, two of cerebral injuries, and one never breathed. Gauss was certain scopolamine was not to blame in the latter case. In the second 500 cases, only half as many were asphyxiated, and the infant mortality was less than during the previous ten years at that clinic.

The most unfavorable report yet given on this method is by Hocheisen. In his list of 100 cases he had five of post-partum hemorrhage, 18 of the children had slow respiration, 15 had asphyxia, and 1 died in the birth, the cause not being stated. Nevertheless, his verdict was: "Good result usually, but dangerous in private practice." Hocheisen did not use the memory test, but Gauss attributes his bad results mainly to use of bad preparations. He secured a sample of the scopolamine used by Hocheisen and tested it on ten patients. It was strongly narcotic, and caused one case of deep coma with injury to uterine and abdominal contractions, three severe post-partum hemorrhages, one

deeply asphyxiated child, strong excitation four times, vertigo and vomiting, once each.

Not a single woman died in such a way that the blame should be laid upon the anesthetic. In the second 500 cases but one death occurred, and that from rupture of the uterus. No case of dangerous hemorrhage occurred, the average loss of blood being far below the normal average. No delay was experienced in the birth of the placenta, manual extraction being required in only 1 per cent. Disease of the mothers after the birth was not higher than usual. The forceps was applied 49 times in the first 500 cases, 25 times in the second 500, the verdict being that the anesthetic permitted this operation to be avoided when it would otherwise have been necessary.

The total mortality of the children in these 1,000 cases was 29, as compared with 49 before this method of anesthesia was introduced.

In addition to the reports above mentioned, the following have been collected from periodical literature, comprising all the writer has been able to collect. In all these scopolamine was employed alone or with morphine, chloroform, or ether.

J. H. Winterberg (*Pacific Medical Journal*, July, 1906), 50 cases, verdict good.

J. W. Hassler (*Surgery, Gynecology, and Obstetrics*, May, 1906), 42 cases, verdict bad.

J. W. Hamilton (*St. Louis Clinique*, January, 1906), 51 cases, verdict good.

Roith (Malaby, S. Calif: *Practitioner*, November, 1906), 230 cases, verdict good.

Penkerk (Malaby, S. Calif: *Practitioner*, November, 1906), 140 cases, verdict good; spinal anesthesia combined.

Lehmann (*Medical Bulletin*, January, 1907), 70 cases, verdict good.

Bakes (Wood: *American Medicine*, December, 1906), 200 cases, verdict good; one death from anesthetic.

Blos (Wood: *American Medicine*, December, 1906), 105 cases.

Bonheim (Wood: *American Medicine*, December, 1906), 70 cases.

DeFontaine (Wood: *American Medicine*, December, 1906), 30 cases.

Dirk (Wood: *American Medicine*, December, 1906), 260 cases; two deaths from anesthetic.

Flatau (Wood: *American Medicine*, December, 1906), 30 cases; one death from anesthetic.

Grevenson (Wood: *American Medicine*, December, 1906), 69 cases.

Hartog (Wood: *American Medicine*, December, 1906), 123 cases.

Israel (Wood: *American Medicine*, December, 1906), 332 cases; two deaths from anesthetic.

Korff (Wood: *American Medicine*, December, 1906), 200 cases.

Landau (Wood: *American Medicine*, December, 1906), 17 cases; one death from anesthetic.

Marmetschke (Wood: *American Medicine*, December, 1906), 17 cases.

Monod (Wood: *American Medicine*, December, 1906), 3 cases.

Morris (Wood: *American Medicine*, December, 1906), 10 cases.

Ries (Wood: *American Medicine*, December, 1906), 72 cases.

Schickelberger (Wood: *American Medicine*, December, 1906), 11 cases.

Seelig (Wood: *American Medicine*, December, 1906), 65 cases.

Suelz (Wood: *American Medicine*, December, 1906), 5 cases.

Sudeck (Wood: *American Medicine*, December, 1906), 1 case; one death from anesthetic.

Terrier (Wood: *American Medicine*, December, 1906), 26 cases.

Von Steinbuechel (Wood: *American Medicine*, December, 1906), 20 cases, verdict good.

Volkman (Wood: *American Medicine*, December, 1906), 20 cases.

Weisinger (Wood: *American Medicine*, December, 1906), 200 cases.

Wild (Wood: *American Medicine*, December, 1906), 8 cases.

Witzel (Wood: *American Medicine*, December, 1906), 3 cases.

Wood (*American Medicine*, December, 1906), 15 cases.

Zaner (Wood: *American Medicine*, December, 1906), 64 cases.

Zahradzicky (Wood: *American Medicine*, December, 1906), 232 cases; one death from anesthetic.

Gwathmey (*Journal American Medical Association*, October 27, 1906), over 500 cases, verdict good.

Preller (*Medical Record*, March 2, 1907), 120 cases, verdict good.

Busse (*Muench. Med. Woch.*, Lancet Clinic, March 2, 1907), 150 cases, verdict good.

Laurendeau (*La Presse Medicale*, November 18, 1905, p. 749), 15 cases, verdict good.

Kroenig, 1,000 cases, verdict good; spinal anesthesia added.

G. Torrance (*Alabama Medical Journal*, April, 1907), 4 cases, verdict good; spinal anesthesia added.

Kreuter (*Journal American Medical Association*, May 4, 1907), 100 cases, verdict good.

Bass (*Muench. Med. Woch.*, March 12, 1907), 107 cases, verdict good.

R. R. Smith (*Detroit Medical Journal*, March, 1906), 30 cases, verdict good.

C. U. Collins (*St. Louis Medical Review*, February 16, 1907, p. 181), 300 cases, verdict good.

C. M. Nicholson (*St. Louis Medical Review*, February 16, 1907, p. 181), 50 cases, verdict bad; used scopolamine alone.

C. M. Nicholson (*St. Louis Medical Review*, February 16, 1907, p. 181), 246 cases, verdict good; morphine and ether added.

G. T. Van Voorhees (Personal Communication), over 500 cases, verdict good.

Ziffer (Holt: *Am. Jour. Clin. Med.*, May, 1907, p. 573), 31 cases, verdict good.

Reining (Holt: *Am. Jour. Clin. Med.*, May, 1907, p. 573), 36 cases, verdict safe.

Weingarten (Holt: *Am. Jour. Clin. Med.*, May, 1907, p. 573), over 50 cases, verdict safe.

Wartapetian (Holt: *Am. Jour. Clin. Med.*, May, 1907, p. 573), verdict bad.

Ploss-Bartels (*N. Y. Med. Monats.*, December, 1907), 45 cases, verdict good.

In the above no distinction is made between obstetrical, surgical, and medical cases. In the following list tablets containing hyoscine hydrobromide gr. 1/100, morphine sulphate gr. 1/4, and cactin (a simple concentration from *Cactus Grandiflora*), gr. 1/67 (Abbott) were employed:

Torgny Anderson (Personal Communication), Nebr., 20 cases, verdict good.

C. W. Bainham (Personal Communication), Ark., 27 cases, verdict good.

J. B. Murphy (Personal Communication), Okla., 10 cases, verdict good.

E. T. Krebs (Personal Communication), Nev., 12 cases, verdict good.

E. E. Flagg (Personal Communication), Okla., 30 cases, verdict good.

91 others reported (Personal Communications) 157 cases, verdict good.

Many of these reported "some cases," "several," "a number," or "many." Where the number was not stated they were credited with but one each. All these were obstetric cases. In not one case has a death of the mother been reported, which could in any way be attributed to the anesthetic; nor of a child, although one babe was still-born, the cause being unknown. No death was reported from scopolamine excepting the nine recorded in the first schedule, all of which were taken from Wood's table, and it seems somewhat remarkable that no more should have been reported. In but one case does Wood give the grounds on which the death was attributed to the anesthetic, and in that we are asked to believe that *advanced* fatty degeneration resulted from a single administration of the anesthetic. Meanwhile this method is being employed by the rank and file of the profession with an enthusiasm that partakes of recklessness. It seems difficult to believe that many hundreds of thousands of these tablets can be placed in the hands of physicians in general, not only the skilled anesthetists of our great clinics but practitioners of every degree of capability, and yet not a solitary death occur from this potent combination. The writer has corresponded with many who are using the tablets, and has not been able to trace a death to them. He would gladly receive reports that would enable him to form a fair and impartial estimate of this therapeutic weapon that promises so much if it be truly as innocuous as it appears.

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SINS OF OMISSION AND SINS OF COMMISSION IN GYNECOLOGY.*

BY

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THERE are two classes of practitioners who engage in the practise of gynecology—the general practitioner and the so-called specialist. Both classes have a great number of sins to answer for. The sins of omission are to be credited to the general prac-

*Read before the New York Academy of Medicine, May 16, 1907.

titioner—he leaves undone the things which he ought to do. The sins of commission are the sins of the specialist—he does the things which he ought not to do.

The sins of omission begin in the lying-in room, and many of the diseases that the child-bearing woman suffers from are due to the negligence of the medical attendant during the three or four weeks immediately following delivery. Lesions of the genital tract, the result of parturition, are overlooked, or, if recognized, are treated as if of slight importance. The vaginal canal is not douched, but the lochial discharge is allowed to become offensive and remain in contact with the solutions of continuity in the cervix uteri, vagina, and perineum. If the woman does not develop acute sepsis from this exposure, she is allowed to leave her bed about the ninth day. She at once assumes the perpendicular position and generally returns at once to her usual occupation. In addition to this she encloses her chest and abdomen in an unyielding cuirass—that abomination known as the corset. Now what is the condition of that woman, and what will her condition be a few weeks or months hence? Her present condition is this: The vaginal outlet—owing to the non-union of the perineal wound—is two or three times its normal size; the vagina has not undergone involution; the uterus is large and heavy and the cervix is lacerated. As soon as the woman gets on her feet the large, heavy uterus sags down in the pelvis. The uterine ligaments have not yet recovered their tenicity and offer but little resistance to the descent of the uterus, and the relaxed condition of the vagina and loss of the perineal body favor the further prolapse of the organ. If, in addition to this, as is generally the case, she wears a tight corset, and allows her bowels to become constipated, she has done nearly all she could do to bring about complete procidentia of the womb. The soft condition of the uterine muscular fiber, shortly after delivery, favors flexion of the organ whenever any force is applied in such a way as to press the fundus either forwards or backwards. If flexion is produced it induces venous stasis and interferes with the process of involution, and leads to catarrhal endometritis, salpingitis, and chronic invalidism. Now, it may be asked, what has the medical attendant done to produce this deplorable condition? In reply I might say he has done nothing. Then why blame him for doing nothing? Had he repaired the lacerations of the perin-

eum and vagina and kept the woman in the recumbent posture for about four weeks, during which time she received three large, hot vaginal douches daily, the laceration of the cervix would have healed perfectly, and the involution of the uterus would have progressed so far that the patient could have assumed the erect posture and engaged in her ordinary occupations without detriment. Why not sew the lacerations of the cervix as well as the lacerations of the perineum and vagina? Because it is unnecessary. The writer knows by experience that all, or nearly all, recent lacerations of the cervix will heal spontaneously, if the patient retains the recumbent posture for a month and the vagina is kept thoroughly clean. The latter condition is essential to success, for, as the late Dr. Goodell very strongly expresses it, "It is expecting a good deal of nature to suppose that she will heal a lacerated cervix which is constantly steeped in a puddle of stinking lochia."

Primary suturing of a lacerated perineum, even when the laceration involves the sphincter ani and rectovaginal septum, has, in the writer's hands, proved a very successful operation; and he thinks that it should be practiced in every case—unless the tissues have been so contused by a delivery characterized by the exercise of so much more force than intelligence, that more or less sloughing is almost inevitable. In such a condition the interests of the patient will be best served by the use of large, hot vaginal douches, until the superficial sloughs have separated and healthy granulations appear. The edges of the tear may then be brought together by silkworm gut suture. If the edges of the laceration are then kept closely in apposition, good union will frequently result.

Lacerations of the cervix frequently occur without any accompanying lesion of the vagina or perineum. In fact, some authors claim that in all primiparæ the cervix is more or less lacerated. If that statement is true it is a sad commentary either on our obstetrical skill, or on the degeneration of tissue which results from our so-called civilization. However, in view of the frequency of laceration of the cervix during delivery every puerperal woman should be subjected to the treatment above indicated, viz., rest in bed in the recumbent posture, and thorough cleansing of the vaginal canal. The temperature of the water used for douching the vagina should be from 110° to 116° F., and

at least two gallons should be used each time a douche is given. When the patient gets on her feet she should wear the weight of her skirts suspended from her shoulders—not from the upper part of her abdomen. No corset should be worn—only a simple corset waist, which can be crumpled in the hand as easily as a pocket handkerchief, and which yields readily to the movements of the thorax and abdomen.

Some practitioners think that a woman is benefited by sitting up soon after labor—rising to answer the calls of nature, etc. They claim that the erect posture favors the escape of the lochia, and that free use of the muscles tends to give them tone. They refer to the lower animals and tell us that the mare and the cow get upon their feet immediately after delivery and go about the field as usual and suffer no inconvenience from doing so. Now that is true, but, so far as my observation goes, the mare and the cow are not often seen meandering about the meadow on their hind legs only. If that was their usual attitude I believe that they also would frequently suffer from the various uterine affections which are unhappily so common in the human female. So far as the use of the muscles for the purpose of giving them tone is concerned, I might say that I do not believe that the period immediately following delivery is the proper time for a woman to practice calisthenics. The laceration of the cervix is often the first link in the chain of evils which I have described. If it has not healed by the time the woman leaves her bed, the probability is that it will never heal spontaneously; hence the importance of treatment which will favor its healing during the puerperium. It cannot be too strongly insisted upon that in the treatment of recent lacerations, the result of labor, *rest and cleanliness* are of the greatest importance. Neither alone is capable of effecting a cure. A woman with a recent laceration of the cervix may remain in bed a month after delivery and yet the laceration will not heal if vaginal douches have not been used. On the other hand, if a woman whose cervix uteri has been torn in labor rises from her bed at the end of a week, the laceration in all probability will not heal even though vaginal injections are regularly employed. Every accoucheur, whether engaged in private or hospital work, should feel it incumbent upon him to endeavor to obtain early healing of all lacerations the result of parturition, for there can be no

doubt that fully one-half of all the cases that fall into the hands of the operative gynecologist have their origin in the lesions incident to childbirth. The worst cases of procidentia uteri, with prolapse of the bladder and rectum, generally owe their existence to unhealed lacerations of the cervix and perineum. These cases are the bane of the gynecological surgeon and cause him to fully appreciate the force of the old saying, "An ounce of prevention is worth a pound of cure."

Cancer of the cervix, which constitutes fully 90 per cent. of all cases of cancer of the uterus, never occurs except in cases in which some form of traumatism has been applied to the cervix—no traumatism, no cancer. The writer does not believe that there is a well-authenticated case of cancer of the truly virginal cervix on record. In the cases reported as such the observer has probably been deceived by the statements of a woman who had every motive for concealing the truth. Neglected lacerations of the cervix uteri, the result of parturition, are responsible for the occurrence of cancer of that portion of the uterus. Fortunately, however, not every case of laceration of the cervix terminates in cancer. There is undoubtedly in certain individuals a condition of the tissues which predisposes to cancer, and this condition of the tissues is transmitted to the individual by heredity. If, however, laceration of the cervix predisposes to cancer, the importance of securing healing of all such lacerations is obvious.

It should be an invariable rule in hospital and private practice for the physician to carefully examine every woman whom he has attended in labor before she is allowed to resume the ordinary duties of life, to ascertain if she is suffering from any lesion of the genital canal. Should any lesion of importance be detected, it should be repaired without delay in order to prevent the evils which will, almost to a certainty, follow in its wake. That there are difficulties in carrying out this rule in private practice, especially in the lower walks of life, the writer knows full well; but if a woman is made to understand that her health in the future and her usefulness in the household may depend upon the result of such examination, her objections will be readily overcome. It is only necessary for the profession to be imbued with the necessity of this examination in order to make it popular, and after it has become so the average woman will not only submit to it without objection, but will consider herself slighted if it is omitted.

One of the greatest difficulties in the way of carrying out this rule in private practice at the present day is the ill-conceived *amour propre* of the attending physician. He is apt to feel that the revelation of the fact that a lesion of the genitals exists will be regarded by the patient and her friends as an evidence of lack of *savoir faire* on his part. As a matter of fact, however, the physician who is honest and truthful generally wins the confidence and esteem of his patients and the respect of his professional brethren, whereas the charlatan who claims to be perfect in all things succeeds, as a rule, in time, in bringing upon himself the contempt which he deserves. When the operative gynecologist is consulted in cases of this kind, he should explain to the patients that lesions of the genital tract sometimes occur in childbirth even under the most skillful treatment. It is no reflection upon the medical attendant if a woman sustains an injury to her genital canal during labor, providing that he has acted with ordinary skill and judgment; but it is a disgrace to him if he fails to inform her of the fact and thus prevents her from securing the benefit which would result from an early repair of the injury.

As a factor in the causation of pelvic disease in women, gonorrheal infection occupies a prominent position. At least 40 per cent. of all women suffering from diseases peculiar to their sex owe their invalidism to the baneful influence of the gonococcus. That nearly all women could be promptly cured, in the early stage of the disease, if properly treated, does not admit of a doubt. That they are not cured is often owing to the apathy of the general practitioner. The nature of the disease is often overlooked, or, if recognized, the disease is treated in a slipshod manner. If gonorrhea, while limited to the vulva and vagina, were vigorously attacked, its extension could be checked almost to a certainty, and gonorrheal endometritis and pyosalpinx would be almost unknown. If the time ever comes when the family physician will take the trouble to examine into the nature of every case of purulent vaginal discharge—instead of assuming that the woman has only the “whites”—and will resort promptly to efficient measures of treatment, we will meet very few of those cases of destructive inflammatory lesions of the female pelvic organs, which are unhappily so common to-day.

The enormous mortality from cancer of the uterus is fairly chargeable to the general practitioner. It is he who

sees the case first, and it is owing to his ignorance and carelessness that the case does not come under the care of a competent operator before the disease has reached the inoperable stage. It is to be hoped that the time is not far distant when the family physician will familiarize himself with the means of making a diagnosis of the disease in its incipency, and, having done so, will apply his knowledge to the case in hand, instead of attributing all the symptoms to "change of life," and allowing the patient to drift unconsciously into a condition for which the only relief is death. As before stated, the Sins of Commission are the sins of the operative gynecologist—he does the things which he ought not to do. At times he is thoroughly honest in his conviction that he is doing right—but in many cases mutilating operations are performed which are entirely unjustifiable, and have absolutely no *raison d'être* except in the love of *éclat* and the undying fondness which some men cherish for operative gynecology.

The writer has seen the uterus removed for a myoma the size of a walnut, and he has seen it removed in cases in which, after its removal, he would have defied the most expert pathologist to detect any lesion which could have been offered as a reasonable excuse for the mutilation. Ovaries have been sacrificed by the hundred in cases in which no organic disease existed—the justification for the operation being found in ill-defined pelvic aches, which were dependent upon an impoverished state of the blood and a condition of malnutrition of the nervous system—the pains and aches in the pelvic region being but local manifestations of the general neurasthenia. Why does not the general surgeon remove the testicles of his male patients for similar conditions? The time has come when a protest should go forth from all honest gynecologists against such unjustifiable practice. Let it be understood that the mere possession of mechanical skill does not constitute the ideal gynecologist; to skill and knowledge must be conjoined a refined morality, based upon the sacred principle, "Do unto others as ye would that they should do unto you."

LABOR IN CONTRACTED PELVES.*

BY

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I WISH to lay before you at this time the histories of some labors complicated by contracted pelves and some conclusions to which my observations of them have led me. My series embraces twenty-seven labors. Four of the women I confined twice. There were, therefore, twenty-three patients. Complete pelvic measurements were not taken in all cases, and where these were wanting the diagnosis was made from the length of the diagonal conjugate and the nature of the labor.

These cases present themselves to the obstetrician under two entirely different sets of circumstances. He may not see the patient until labor is more or less advanced, or he may be consulted beforehand. The greater number of my cases fall under the first heading.

It is not my purpose to cite more than two or three illustrative cases. The first that I have chosen is that of C. W., October 20, I-para, Canadian, whom I delivered at St. Michael's Hospital on February 20, 1905. I do not know how long she had been in labor, but three hours after she came to the hospital the liquor amnii was found to be all away and both feet presenting in the os. Delivery was proceeded with and the head delivered with difficulty by shoulder-jaw traction and suprapubic pressure. Her measurements were:

Interspinous, 29 cm.; diagonal conj., 11 cm. Intercristal, 28 cm.; post. interspin., 10 cm. External conjugate, 15.5 cm.; true conj., 8.5 cm.; true transverse, 10.5 cm.

The measurements of the child's head were:

Occipito-front., 13 cm.; bitemporal, 8 cm.; sub-occip.-breg., 10 cm.; biparietal, 10 cm.; bimastoid, 8 cm.

The measurements of the child's head were taken as soon as

*Read at a meeting of the Toronto Clinical Society.

the effects of moulding had passed off; the internal measurements by Skutsch's internal pelvimeter. Mother and child both did well.

The next case is that of Mrs. B., V-para, English, æt. 31, whom I confined at the Burnside on February 7, 1906. She came to the hospital after twelve hours of severe labor. The liquor amnii had escaped an hour before she began to feel pain. Her pains were violent, the head was not engaged, the position was O. D. P., the os was the size of a crown piece and dilatable. I dilated the os manually, easily did podalic version, and delivered. It was difficult to get the arms down and one clavicle was fractured in the process. Shoulder-jaw traction and suprapubic pressure were tried ineffectually for a minute or two, but finally the head came through the brim suddenly. The measurements were:

Interspinous, 25 cm.; diag. conjug., 10.5 cm. Intercristal, 26 cm.; true conjug., 8.2 cm.; external conjug., 19 cm.; true transverse, 11 cm.

The baby's measurements were:

Oc. ment., 15 cm.; biparietal, 9.5 cm.; oc. front., 12 cm.; bi-temporal, 7.5 cm. Sub-oc.-breg., 11 cm.; biniastoid, 8 cm.

It was a male and weighed eight pounds one ounce. The arm was bound to the side for ten days, by which time the clavicle had united. Mother and child left the hospital well at the end of two weeks. This woman's previous labors were difficult instrumental cases, except one, which was rapid and unaided. Two girls were born alive. One boy was born dead, and one boy died on the tenth day.

These cases prove that when the head comes last a living, full-term, full-sized child may be delivered through a pelvis with a conjugate of from 3.25 to 3.50 inches, with a slightly shortened transverse; and that such a degree of contraction is occasionally no bar to a normal natural labor.

In the first case the child presented by the breech. In the second the head was presenting, but not engaged after some hours of severe labor. In the latter case the question arises: Why not apply the forceps? Before answering this question let me give you the history of another case or two:

Mrs. C., seen in consultation. The patient had been forty hours in labor; all the liquor amnii had drained away, and a

marked retraction ring was present; there was a huge caput succedaneum; the head was in the O. L. A. position, tightly jammed against the brim, but not entering it, and the fetal heart was beating strongly. The Barnes-Simpson forceps had been applied by the attending physician, but had slipped off. I applied the Porter Mathew axis-traction forceps, and they, too, slipped. We were then confronted with that most horrible of all obstetrical operations—craniotomy upon a living child. Rather than do this I decided to try version, and accomplished it with great difficulty. The child's heart beat for some little time after delivery, but it did not survive. The mother made an uninterrupted recovery.

Mrs. C., seen in consultation. This woman has some hip-joint trouble, and her pelvis is unilaterally contracted. To her first confinement I was called after she had been a long time in labor. I applied Porter Mathew axis-traction forceps, and, after a long, hard pull delivered a dead baby. To her next labor I was called early and found the liquor amnii present and the os dilatable. I dilated the os manually and easily did a version, bringing the occiput into the widest part of the pelvis. The child was delivered with difficulty but safely.

Mrs. W., seen in consultation. This patient was a I-para who had been a long time in labor. The position was O. L. A., the head not engaged. Axis-traction forceps were applied and considerable traction made, but the head would not engage. In making an examination after this trial I noticed a suspicious grating of the bones of the head. However, I proceeded to do a version and delivered the child. It breathed and cried at once, but within an hour it died, apparently of cerebral hemorrhage. The occipital bone was fractured, I think, by the forceps. Such has been my experience almost invariably. When the head is above the brim it is impossible to draw it into a contracted pelvis with forceps and have the child live. Herman says: "The choice between forceps and turning, when the head is in a favorable position, depends mainly upon the extent to which the head is engaged in the brim."* With this I entirely agree.

Why not try forceps first and, if they fail, *then* do a version?

Because, unless the greatest diameter of the head has already moulded through the brim, they nearly always *do* fail.

Because the application of the forceps furthers the escape of the liquor amnii and thereby renders a subsequent version more

*"Difficulty Labor," p. 204.

difficult; furthermore, forcible trial of the forceps exposes the infant to great danger of fracture of the skull; and, lastly, the best time to apply the forceps is after the head has moulded through the brim, whereas turning should be done early, before the liquor amnii is lost. Allow me to summarize the results:

All the mothers made good recoveries. Eight infants were born dead and nineteen alive. Of the eight infants born dead:

One was in the case of the patient above referred to, who had been a long time in labor. The forceps had been tried unsuccessfully and the version was very difficult.

One was in the case above referred to, in which the forceps alone were used.

One was in the case of a woman brought in from the country after a long labor. The cord was prolapsed and the child dead. Craniotomy was done.

Two were cases in which the lack of dilatation of the soft parts seemed to me to be responsible for the result.

One was a face presentation. The patient had been in more or less severe labor for three days.

In one the forceps were tried first and were, I think, responsible for the death of the child.

One was a miscarriage.

In only one of the eight was the prophylactic, or early version, done. In this case, had more time been spent in distending the vagina and perineum, or had the labor been permitted to go on for a time as a breech case after the version was done, the result might have been different. I venture to think that these results are very good in a series of cases of pelvic contraction so great that the induction of premature labor, symphyseotomy, pubiotomy, and Cesarean section have been variously recommended for them at different clinics.

A few observations on the value of external mensuration would seem to be in order.

Of one hundred women who had no contraction of the conjugate the average measurements of the interspinous, intercrystal, and external conjugate diameters compare with the averages of my contracted pelvis series as follows:

	Uncontracted.	Contracted.
Interspinous	25.40 cm.	24.03 cm.
Intercrystal	27.96 cm.	26.23 cm.
External conjug.....	19.6 cm.	17.23 cm.

The average difference between the interspinous and intercrystal diameters was, in the uncontracted pelves, 2.56 cm., and in the contracted 2.20 cm.

It would seem from these averages that external menstruation should give us, as a rule, some knowledge as to internal contraction, and as a matter of fact it does. The measurements vary, however, within somewhat wide limits, *e.g.*:

	Uncontracted.		Contracted.	
	Max.	Min.	Max.	Min.
Interspinous	29 cm.	22 cm.	29 cm.	19.5 cm.
Intercrystal	31.5 cm.	25 cm.	28 cm.	23 cm.
Extern. conjug.	22 cm.	16 cm.	19.5 cm.	15 cm.

Occasionally in a patient whose external measurements would seem almost certainly to indicate an internal contraction the internal measurements are found to be normal. The following is a case in point:

A. M., I-para, confined at the B. H. on March 25, 1906. There was no difficulty in the labor, which was over in ten hours. The infant weighed 6 pounds 3 1-2 ounces. In this case the external measurements were:

Interspinous, 26 cm.; transverse outlet, 10 cm.; intercrystal, 27 cm.; pubococcygeal, 11.5 cm.; external conjug., 15.5 cm.; post-interspinous, 7.5 cm.

Between the summits of the crests 23.5 cm. The internal measurements, taken with a Skutsch pelvimeter, were:

True conjugate, 10.6 cm.; true transverse, 11.5 cm.; diagonal conjugate, 12.0 cm.

On the other hand the conjugate may be shorter than the normal without marked alteration in the external measurements.

I say *marked* alteration because the measurements vary within such wide limits in normal pelves. External mensuration, therefore, should be confirmed by internal mensuration, and by other signs to be hereafter referred to. The diagonal conjugate (the distance from the anterior surface of the promontory to the under border of the subpubic ligament) is a surer guide. It cannot always be taken, however. In a lady who was referred to me for examination recently the vagina was so short that I could not, even with the patient under chloroform, reach the promontory.

A very valuable indication is given by the failure of the head to engage in the brim at the onset of labor when the patient is a

primipara and the position normal. The type of contracted pelvis met with was the simple flat pelvis in all the women but two. Of these one had a kyphoscoliotic pelvis and the other a pelvis obliquely contracted as a result of old hip-joint disease.

In conclusion I might remark that careful mensuration has led me to the conclusion that minor degrees of contraction of the pelvis are more frequent on this continent than a perusal of the obstetric literature would lead one to suppose.*

Interspinous, 25 cm.; diag. conjug., 10.5 cm.; intercrystal, 26 cm.; true conjug., 8.0 cm.; extern. conjug., 18 cm.

The measurements of the baby's head were:

Trachelo-breg., 11 cm.; bitemp., 8 cm.; occip.-ment., 13.5 cm.; bipariet., 9 cm.; occip.-front., 12 cm.; bimastoid, 7 cm.; sub-occip.-breg., 9 cm.

The version was easy, but the delivery difficult. The infant lived, apparently in fair health, for five days, and then suddenly died. The autopsy showed subdural hemorrhage, hemorrhage into the suprarenal capsules, and two large hematomata on the under surface of the liver, one of which had apparently ruptured, causing death by internal hemorrhage. The conclusion from this case would be that this method of delivery is not applicable when the conjugate is shorter than 8.0 cm. The mother in this case had an uninterrupted recovery.

54 AVENUE ROAD.

THE TREATMENT OF PUERPERAL INFECTION.†

BY

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In considering this subject I will not deal with preventive treatment, as that does not directly concern diseased conditions, but pertains to the management of healthy subjects with a view of preventing disease.

Since there has been a general acceptance of the fact that

*NOTE.—Since the above was written I have had several more labors in contracted pelvis to conduct. Of these the most interesting was that of B. H., aet. 37, iv. para. Her first two children were girls, delivered *p.v.* by forceps. The third was a boy, delivered by Cesarean section after failure of attempts at forceps delivery.

†Read before the Washington Obstetrical and Gynecological Society, Feb. 15, 1907.

puerperal infection does not differ from ordinary wound infection, reference to etiology will be limited to two points influencing intelligent application of remedies. First, *sapremia*, the condition produced by the absorption of preformed ptomaines; second, *septicemia*, or septic infection, the entrance into the circulation of various forms of infecting microorganisms.

In *sapremia*, putrefactive changes in secundines or blood clots, remaining in the cavity of the uterus are the causes of the poisons absorbed. I trust, therefore, you will pardon the mention of some conditions predisposing to incomplete evacuation of the uterus. In many cases it is due to hastened delivery of the after-birth by expression and traction upon the cord before the placenta has separated from the uterus. This has a tendency to produce marked tonic spasm of the womb, a condition recognized by a prolonged and marked contraction that reduces the uterus much below its normal size. Continuation of such an abnormal strain upon the muscles of the uterus results in exhaustion and relaxation, with slight hemorrhage in the cavity. On the coagulation of the blood the uterus is stimulated to renewed contraction, but with insufficient force to expel the clots. The uterus again relaxes and more or less inertia follows, renewed hemorrhage in the cavity of the uterus takes place, and the clots increase in size. This is repeated from time to time, the uterus growing larger as it fills with blood. The woman becomes more and more exhausted, and the uterus tired from overwork, so that there is finally complete inertia. Then, one of two things follows, either a severe hemorrhage or retention of the clots, and later *sapremia*. Smaller clots may be retained in tonic contractions of the uterus when one or more of the uterine sinuses are not completely freed from placental tissue, a condition unfavorable to the formation of coagula in the ends of the veins.

Another cause for retained portions of placenta is deformity of the womb. While this occurs only in a small percentage of cases, I think it is encountered more often than is generally presumed. I refer to the bicornate uterus, and especially to slight depressions in one or the other angles of the uterus. These are often so slight that the unevenness of the fundus may not be detected by the hand grasping it through the abdominal walls. Yet there may be pockets from one to two inches in diameter, more or less hemispherical in shape. Sometimes the plugs of placenta

removed from them will look like half a baseball, or other spherical objects of smaller sizes.

It is important in examining the uterus to notice carefully the degree of firmness exhibited at various points on the inner surface of the womb, for depressions may be so filled with placental tissue that the surface appears to lie in a continuous plain with the other parts of the uterine mucosa. But pressure with the end of the finger will detect a boggy sensation characteristic of placental tissue. It will also be noticed that during contraction the uterine tissue of the placental site becomes firm and resisting, while plugs of placental tissue in pocket deformities have a tendency to bulge into the uterine cavity and are but slightly increased in tension or density. The placental site may also be distinguished from such masses by the interlobular bands that form trabeculæ over its surface. They resist considerable pressure by the finger, while the spaces between them are soft and spongy in the intervals between contractions.

Again, I have seen in the bicornate womb where the tubo-uterine opening was much relaxed, portions of the placenta extending into the Fallopian tube.

In the uterus bicornis unicollis with the fetus in one cavity and the afterbirth in the other, I saw a case in which that portion of the amniotic sack filling the fetal side was left intact. The true condition was not suspected because the sack of the placental side was apparently large enough to contain both fetus and afterbirth. In this instance the attending physician did not recognize the double character of the womb.

While sapremia is not usually marked until the third day, or after, it may prove fatal in thirty-six or forty-eight hours where large quantities of toxins are rapidly absorbed. I have observed this in twenty-four hours retention of separated placenta and membranes. The odor accompanying such decomposition was not present and toxins were not as virulent as they might have been a few days later, but the enormous quantity absorbed was sufficient to saturate the patient.

The treatment consists in complete removal of all débris found in the cavity of the uterus as soon as the first chill has subsided. This is best done with the finger, sweeping its palmer surface over the entire surface of the cavity of the uterus, breaking into a pulp all particles that are too large to be easily

removed, and then washing them out with a brisk stream of sterile water. Pieces adhering closely to the placental site that cannot be removed by side to side motion of the finger may be dislodged by the finger nail, forcing it from below upwards in the long axis of the uterus. In like manner shreds of membrane may be detached, so that the use of the curette is rarely required, except to hook out large, loose masses, and even then lithotomy forceps, shaped after the pattern of obstetrical forceps, will be found much more serviceable.

If the finger does not readily reach the fundus, the entire hand should be carried into the vagina and the uterus telescoped down upon the examining finger by suprapubic pressure.

In *septicemia*, the infection enters the circulation either through the lymphatics or blood-vessels. It may be mild or fatal, according to the intensity or degree of invasion. Mild cases are usually confined to superficial invasion of the tissues of the uterus, but grow more serious as extension into deeper structures occurs, resulting in septic softening of uterus, abscesses, peritonitis, thrombophlebitis, or pyemia. Extension takes place through the lymphatics and blood-vessels, and less frequently along the mucosa to the Fallopian tubes in which septic foci may form.

The infecting agent is most frequently the streptococcus or the staphylococcus, and less frequently the gonococcus, the colon, or diphtheria bacillus, gas producing bacilli, etc.

Superficial invasion may become extremely serious when sufficiently intense to cause necrosis and sloughing of tissue. There is then a mixed toxemia; septicemia plus sapremia.

The treatment of septicemia is systemic and surgical. In both the vital forces should be fostered.

By systemic treatment I refer to remedies that are intended to combat the disease through the agency of the circulation.

The two principal agents are Credé's collargol, or other silver preparation, and antistreptococcus serum.

Collargol is supposed to act as a systemic antiseptic. It is used by inunction, hypodermic, and intravenous injections. It has a few adherents in Europe, and they claim where it fails that it is because insufficient dosage is employed. This argument is hardly logical, for some cases will recover without treatment, and others are hopeless at an early stage. Collargol has excited no enthusiasm in America, and I have no knowledge of its value.

Antistreptococcus serum has not sustained the claims made for it. This is shown by the report of a committee appointed by the American Gynecological Society in 1899 to investigate the subject. Their report in substance was that it has no curative effect on puerperal infection. The same conclusions are reached by all individuals that I have been able to consult. Whitridge Williams says it may be prophylactic, but is not a curative remedy when used after the process of infection is well established, and that it is not an antitoxine, but acts by stimulating leucocytosis. At best its application is limited, for it is offered for use in pure streptococcic infection only. Certainly the serum cannot accomplish results in advanced thrombophlebitis or peritonitis. My testimony is unfavorable to it.

Disappointed then in the methods of systemic treatment, we are forced to rely upon surgical relief. For an intelligent application of remedies, an accurate diagnosis is necessary, not so much as to the character of infection, even though it is desirable to know the kind of infection we have to deal with, but as to the tissues involved, the extent of invasion, and location of infected centers.

For instance, mild cases are usually confined to superficial invasion, or practically to the uterine cavity, the mucosa, and immediately underlying tissues. Deep invasions may involve the uterine muscularis, uterine ligaments, peritoneum, pelvic veins and lymphatics, tubes, ovaries. Less virulent infection may involve the deeper tissues with minor constitutional impression than intense toxicity of limited penetration. Therefore, it is pertinent to consider the intensity of infection as well as the extent of invasion.

Septic infection may be *antepartum* or *postpartum*. The antepartum form has its origin usually in separations of the placenta, resulting in hemorrhage and accumulation of clots, forming a fertile culture medium. Mild cases frequently recover after evacuation of the uterus with proper precaution, but otherwise they should be treated as superficial postpartum invasions.

Where the process is extensive and a large surface of the placental site is involved, the condition becomes extremely serious. Labor is slow because uterine contractions are inefficient. This is due to septic softening, rendering the muscularis involved incapable of contracting. The remaining portion of the uterus becomes exhausted, more or less inertia follows, and instrumental delivery is often required.

If there is much involvement of the deeper uterine tissues, the womb fails to contract after delivery, and form the usual hard globular mass found behind the pubic bone. On the contrary, it is soft and flabby, and feels like an empty bag lying in the hollow of the sacrum and extending above the brim of the pelvis. Its outlines are difficult to determine. The discharges collect in the relaxed uterus, and infection extends to other parts of the organ. Constitutional symptoms are pronounced and the patient rapidly grows worse. With streptococcus infection, the production of pus may be copious, and if the process extends to the peritoneum, marked depression with low temperature and rapidly increasing pulse and varied delirium are noticeable symptoms. The condition is grave and demands heroic measures, as treatment to the cavity of the uterus is ineffectual aside from accelerating drainage.

Hysterectomy, therefore, is demanded in the first few days after delivery, in face of the warning that this form of infection is liable to excite peritonitis by contamination during the operation. In the class of cases under consideration, peritonitis is present in a very violent form, and a few hours delay may mean the death of the patient, for they usually terminate fatally in the first week. Hysterectomy to be of any service must be done promptly, even where diagnosis of peritonitis is doubtful, for the liability to occurrence and extension of thrombophlebitis into the pelvic veins is very great. When hysterectomy is delayed until this takes place, either pyemia supervenes or the removal of thrombosed veins adds to the magnitude of the operation.

I am so convinced of the necessity of early surgical interference in advanced antepartum sepsis that I do not hesitate to recommend its prompt execution. Delay increases mortality and discredits the operation.

POSTPARTUM INFECTION.

The milder form of postpartum infection, when practically confined to the cavity of the uterus, yields readily to the Carosa treatment, but, in the advanced process, involving deeper tissues of the uterus, this is useless. It depends upon three principles for its effectiveness: First, promotion of drainage and the prevention of the accumulation of discharges in the cavity of the uterus by filling the latter with gauze; second, the antiseptic effect

of the alcohol used; third the dehydrating and hardening of the epithelium and other superficial tissues, which to a certain extent prevent absorption of septic matter.

While little confidence can be placed in the antiseptic action of irritating or coagulating fluids, such as strong solutions of bichloride of mercury and carbolic acid, alcohol is serviceable. The treatment consists, first, in a thorough cleansing of the vagina and uterine cavity; second, introduction into the uterus of a small sterile catheter, to the tip of which is stitched a narrow strip of sterile gauze. The latter is loosely packed around the catheter until the cavity is filled (without pressure). The cervical canal is not packed, but a piece of the tape is left projecting in the vagina to facilitate removal. The end of the catheter is then brought out through a sterile dressing, and protected by a second dressing, the removal of which renders access to the catheter easy without interfering with the pads next to the vulva. Through the catheter one or two drachms of fifty or seventy-five per cent. alcohol is injected every twenty or thirty minutes for the first twenty-four or forty-eight hours, and as the temperature declines the intervals between injections are gradually lengthened. The dressing is left in place from four or five days to a week. At the end of that time the infection is under good control. But, if the temperature shows a disposition to rise, the treatment is again resumed.

If, with careful application of this treatment, the temperature and pulse continue to increase, it is evidence that the process of infection has extended beyond the uterine cavity and that local treatment is useless.

Irrigation of the uterus is often abused by a lack of discretion in its use, and when admissible may be harmful from carelessness or rough handling of the syringe nozzle by abrading the mucosa or breaking through the exudate underlying the infected area. In this way atria for renewed absorption are formed. This is liable to occur in the use of metallic or other hard instruments. To be effectual, a bold stream of sterile water should be used at short intervals, the time being so regulated that the patient's temperature is not allowed to rise. It acts mechanically and can accomplish no good in deep seated infection, therefore its usefulness is confined to superficial invasions when the mucosa is covered with necrotic or sloughing tissue. This condition is

recognized by the escape of dirty looking débris, with perhaps some offensive discharge, patulous os uteri, and the absence of the marked flabby condition of extensive invasion of the muscularis uteri. Little or no interference with involution of the uterus (firm uterus, contracted os, healthy discharges) indicates that the uterine cavity is practically free, that infection is deep seated, and the use of the douche is contraindicated. When irrigation does not control the fever, we know the treatment is misdirected.

At best flushing is neither as safe nor as reliable as the Carosa treatment, and is more troublesome and annoying to the physician and patient.

When infection involves deeper structures, the process may follow two or three courses: (A) If in the direction of the peritoneum, peritonitis may result, (B) but when the infection becomes more or less sterile, it may be localized in the walls of the uterus forming intramural abscesses. (C) When it invades the sinuses in the placental site thrombophlebitis to a greater or less degree results.

Peritonitis usually occurs in the more violent forms of infection, because in milder cases hematic opsonosis modifies the process, consequently the symptoms develop in a few days, whereas circumscribed abscesses are not detected until the second or third week, or later. In puerperal peritonitis prompt action is necessary. A few cases do recover under simple abdominal section and drainage, others under vaginal incision and iodoform gauze packing; but the later treatment has an exceedingly limited field of application, because of its indirectness in reaching the septic centers. If the peritonitis is confined to the posterior wall of the uterus, gauze packing may excite adhesive inflammation and pouring out of enough exudate into and beneath the peritoneum to block the lymphatics, but its application requires exactness of diagnosis, so that its practical employment is narrowed down to the drainage of pus collections and free fluids in the pelvis.

Hysterectomy in peritonitis is unpromising, upon one hand, from the fact that it is delayed too long, resulting in high mortality. While upon the other hand, early operations are attended with less mortality, we recognize a liability to an unnecessary sacrifice of the uterus in some cases. It is hard, therefore, to draw a line of distinction, and where one has the courage of his

conviction, it is almost impossible to convince the patient and her friends that the operation is needful.

Abscess occurs at the end of the second week or a little later, after the most acute symptoms of sepsis have passed. The cavity of the uterus, therefore, is apparently free from serious infection or débris. The temperature curve is septic and devoid of chills, unless complicated with thrombophlebitis.

If the pelvic cavity is not obstructed with exudates these abscesses may be felt through thin or relaxed abdominal walls. When the abscess is single a rounded, slightly flattened outline may be felt on the peritoneal surface of the uterus, which, to the sense of touch, feels something like a small, deeply seated fibroid tumor, but is more elastic, and the outlines are not so sharply marked. When the Fallopian tubes and cavity of the uterus are not infected and the uterus is firm in texture, diagnosis is not likely to be confused with other diseased conditions, except thrombophlebitis. The latter is marked by chills, sharp rise in temperature, and rapid decline to normal. This is repeated once or twice in twenty-four hours. In the interval the patient's condition is apparently good (except late in the disease). In the late cases frequent pulse, pyemic temperature curve and generally bad condition are noticeable. The absence of hard, cord-like ridges along the course of the veins is a valuable sign in excluding this complication.

I have collected nineteen cases, all of which have been verified either by operation or autopsy. Of this number four were post-mortem findings, four hysterectomies, with one death, and eleven others that were incised and drained with eleven recoveries. The location of the abscess was mainly in the region of the fundus, or at points quite accessible through abdominal incisions. They were either subperitoneal or just under the outer muscular layer of the uterus. This is accounted for, perhaps, by the fact that the main blood supply to the uterus is through this layer of muscle, consequently the vascularity of the parts favored phagocytic action at this point, and the spread of infection becoming modified, suppuration resulted at the place where the barrier appeared. If such is not the case suppurating centers should be found in deeper parts of the uterine walls with equal frequency.

In one case there was thrombophlebitis of the pampiniform plexus, uterine and ovarian veins of the right side. The condi-

tion was such the veins required ligation and excision as high as the brim of the pelvis. The case had four retention abscesses between the coils of the intestines. Another had five abscesses similarly situated. In the latter a prominent surgeon tried to drain through the vagina, making two attempts, but failed. When I opened the abdomen, the utter hopelessness of drainage by that route was apparent. The pus centers were too high in the abdomen and the fundal abscess so inaccessible that the fingers could never have reached it from below, or, if perchance the uterine abscess could have been reached, it very likely would not have been detected, as its elevation above the surrounding surface was so limited. These abscesses can be better handled through an abdominal incision, even if it should be desirable to drain below.

The expectant plan of treatment promises nothing. They all die. The only means of relief, therefore, is through surgical intervention.

Hysterectomy has given me a mortality of twenty-five per cent., which perhaps would have been greater if a larger number of cases had been treated. All drainage cases recovered; eleven in number, eight in my hands, three in others. This is good showing when compared with the high mortality of puerperal hysterectomy.

It is but a reasonable conclusion to say that an abscess of the uterus in the puerperal woman should be treated as similar pus collections elsewhere; that is, on general surgical principles; exceptions, however, should be made in cases of multiple abscesses where the chances of successful draining are doubtful. Besides, the uterine musculature is so much involved in septic inflammation nothing short of hysterectomy will answer.

As thrombus of the pelvic veins occurs in six or seven per cent. of puerperal infection, with high mortality, considerable saving of life may be made by early recognition of the disease and prompt interference. It may begin early, but usually the symptoms are not clearly defined until late.* The infection follows the uterine, ovarian, round ligament, and hypo-

* Exceptionally the symptoms of intra mural abscess may appear earlier. In Blot's case (*A. J. C. Med.*, 1905, p. 368), the chill came on the third day, and on the ninth the thrombus had advanced to such an extent resection of the left side of the uterus and the corresponding broad ligament was required.

gastric veins, and the coagulations may extend far enough to block the inferior vena cava.

The disease is often complicated with septic conditions of other parts, such as involvement of tubes, ovaries, suppuration in the parenchyma of the uterus, parauterine tissues, or the clot itself may be permeated with pus, the latter escaping directly into the circulation.

The size of the thrombus does not always correspond to the gravity of the symptoms. Intense infection of a small thrombus may cause more marked symptoms than a large clot of less virulence. This was illustrated in a case of mine at the Grady Hospital. The clot was confined to the vein of the right round ligament and was only three-sixteenths of an inch in diameter and two inches in length. The symptoms were violent, but were immediately and completely relieved by removal of the vein. Upon the other hand, in another case with involvement of the pampiniform plexus, uterine and ovarian veins of the right side, the symptoms did not differ materially from a mild case of puerperal infection of the uterine mucosa.

The symptoms, according to Heiderman, are headache, slight irregular rise in temperature, small frequent pulse (gradually but steadily increasing), dysuria, and ischuria, sudden pain in the side, pains in bending hip (in femoral vein under Pourpart's ligament), lassitude, and vertigo on leaving bed. Howard* says "temperature and pulse rise rapidly, rigors supervene, followed by profuse sweating; tongue is dry; appetite is lost, and there may be delirium. To these symptoms are soon added those of pyemia; rapid oscillations of temperature, rigors, sweating, and dissemination suppurations." Mohler's symptom is gradually and steadily increasing pulse (climbing). In bad cases it is a most important one. Vany states that the pulse and temperature curve vary. They may go up in successive bounds as the temperature comes down. Each forward leap of the pulse curve corresponds to a new extension of the clot.

In all cases reported, the chill is a prominent feature. It usually comes on in the second or third week, showing a tendency to slow extension and pathogenic invasion of clot, but may be deferred, as in one of Duret's cases, to the fortieth day, or perhaps later. If the external or common iliac vein is involved.

*Howard's Hunterian Lectures.

there will be swelling of the leg, and the duration of the disease may be prolonged as much as seventy-four days or more. But there are cases of very short duration, which are sometimes masked by complication, and may be entirely overlooked on account of the absence of suggestive signs and symptoms.

While the above symptoms are commonly met with in the disease, they represent cases that are influenced more or less by the process of suppuration, and, therefore, differ materially from those that characterize uncomplicated and nonsuppurating, but infected thrombi. I have observed that the latter give the following chain of symptoms :

The disease may or may not be preceded by signs and symptoms of slight septic disturbances for the first week or two. These manifestations, whenever present, become less marked and may entirely disappear, leaving the patient apparently convalescent. In the second or third week the first pronounced symptom is the chill, which is well marked if infection is intense. This is accompanied by rapid pulse and sharp rise of temperature to 103° to 105° , terminating in rather rapid decline to or near normal. These symptoms usually occur once in twenty-four hours, but may be repeated in shorter intervals of time. In the interval the patient is apparently in a normal condition, except that she is left weaker after each attack. The change may be slight, consequently one may be deceived into the belief that each chill will be the last before convalescence begins, but, on the contrary, the pulse shows gradual loss in tension and volume and an increase in rapidity (climbing).

The pelvis may be negative on examination if the thrombus is small, but when large or late in the disease the veins feel like tortuous cords to the fingers.

When the infection extends through the walls of the vessels, the paravascular tissue may be hard and nodular, the general direction of the exudate taking the course of the vessels, which is a material aid in diagnosis. Such exudates are not markedly sensitive or painful to pressure in bimanual examinations.

Diagnosis of uncomplicated puerperal thrombosis of the pelvic veins is made by taking into consideration the above symptoms with the result of careful pelvic examinations. The value of the latter consists mainly in the ability to exclude other conditions. If, in the examination of the pelvis, the process of invo-

lution of the uterus appears not to have been materially interfered with; that is, if the uterus is firm and reasonably small for the period of puerperium, if the cervical canal is not patulous, and no unhealthy discharge is escaping from it, it is reasonable to suppose that the uterus is not involved. Serious infection of the uterus may then be excluded, and the same may be said of the Fallopian tubes and ovaries when they are not palpable or buried in exudate.

Thrombosis due to laceration of the vagina is comparatively rare. This source of origin, therefore, can usually be disregarded, especially if the lesion is slight in extent; but if the tear extends high up in the vagina or deep into the ischiorectal fossa, the lateral vaginal plexus of veins may become involved. When this occurs they are covered up at an early stage of the disease by exudate, and in the place of cordlike vessels being felt on the side of the vagina, a nodulous ridge may lead up to the base of the broad ligament. When this condition is found, if other parts of the pelvis are free, localization of the thrombus in the lateral vaginal veins can be safely determined.

In differentiating between thrombosis and intramural abscess of the uterus, uncomplicated by peritonitis and adhesions, in the latter small rounded flat elevations upon the surface of the uterus may be felt in patients with very thin or relaxed abdominal walls. Such cases present the ordinary septic pulse and temperature curves, and do not have the distinct interval of nonsuppurating thrombus. When complicated by adhesions, or diseases of the appendage with tense abdominal walls, exclusion of intramural abscess and detection of tortuous veins are extremely difficult or impossible.

Suppurating thrombosis will very likely be overlooked when complicated with peritonitis, or pus tubes, unless symptoms of pyemia supervene, or the pulse shows a tendency to become climbing in character.

The treatment is mainly surgical,* for when a diagnosis is made most cases are well advanced into the third or fourth week, which is ample time to test temporizing treatment, and mild cases either show signs of improvement earlier or go unrecognized altogether.

Any puerperal case with pelvic lesions, variable temperature,

*In this I do not include all cases of phlegmasia alba dolens, for often this does not depend upon local (or pelvic) lesions, but upon other causes.

and climbing pulse of three to four weeks' duration without signs of improvement justifies an operation of some kind, especially if the uterus proves negative as the source of trouble. If a mistake is made in diagnosis, and the locus infectus is found in the Fallopian tubes, or abscesses in other parts of the pelvis, no surgical error is committed, for they too are in need of serious attention.

There are several plans of procedure: First, excision of thrombosed veins; second, ligation of thrombosed veins; third, hysterectomy. In addition to these, attention to the complicating conditions must be given.

Some bad cases with small but intensely infected clots may be quickly relieved by removal of small veins. Upon the other hand, cases of apparently mild type may have great involvement of veins requiring extensive excision, therefore the magnitude of this operation cannot be determined beforehand. Prolonged cases with extensive involvement require trying operations and are less able to stand them.

Guicciardi's objection to excision of veins is the liability of reinfecting the wound by soiling the parts with clot. How great the liability to this accident is I cannot say, but in two of my cases in which the veins were lacerated by digging the clots out of the broad ligament with the fingers, the temperature range for two or three days was quite irregular, and reached high marks at short intervals (103° - 105°), but some of this temperature may have been due to the extensive surface involved. Each of these had numerous abscesses in the uterus and ovaries, and pus collections between the coils of the intestine, besides the omentum and intestine were softened and adherent from the umbilicus downward. As the chill was not repeated in either case, it is very likely that soiling the wound with clots had little to do with it. This may be avoided, however, by double ligation and cutting between to prevent coagula escaping from the ends of the vessels. Should the vessels be lacerated, as in the cases mentioned, a drain may be inserted to protect the peritoneum.

A very few cases have been reported. The number of excisions in Guicciardi's collection is too small for just conclusions to be drawn and the conditions may vary so much that the methods may not have had equal advantages. Even the addition of five cases (one by Boldt and four of my own) so modified the

mortality that the showing for this method of operating quite surpasses ligation. It is theoretically the most surgical, but it must have its limits, particularly in cases that cannot stand long operations. In early cases this method is to be preferred, especially if the clot is confined to the veins of the true pelvis.

Ligation of the veins is not satisfactory, especially if the clots become infected with pyogenic cocci. Pus in a large vein shut out from the circulation by a ligature only is a hazardous condition. If the ligature is of soluble material, it may disappear or loosen too soon and let a flood of pus into the general circulation. Neither is it a sufficient barrier to the further progress of infecting microorganisms. The paravascular infection may pass beyond the obstructing ligature and by permeating the walls of the vessels infect the new clot on the proximate side and renew the process of thrombophlebitis.

Hysterectomy in this condition is extremely dangerous. In the first place it is often delayed too long to successfully remove all the infected centers. When thrombosed vessels are confined to the uterus it has some chances of success, but propagation through the vessels into the broad ligament extends the infected field into the pelvic veins, and at other times the uterus may not be at fault, for the thrombi may lie exclusively in vessels outside of that organ. Removal of the uterus in such circumstances is worse than useless, as it would leave the thrombosed vessels undisturbed. Upon the other hand, excision of the diseased veins without hysterectomy when the uterus is not involved is promising, except in extreme cases.

In the summary of the small number of cases accessible the results are as follows:

Resection of veins, mortality.....	28 4-7 per cent.
Ligation of veins, mortality.....	44 4-9 per cent.
Hysterectomy, mortality	64 1-4 per cent.

From this I venture the assertion that until further experience shall have worked out the solution of this problem, we must accept the opinion that early recognition of septic thrombosis of the pelvic veins and prompt excision is the best method of surgical relief we can offer our patients in this complication of the disease.

There is a strong point in the treatment of puerperal infection

I wish to make, that is, nearly all of these cases are either mild in character or of superficial invasion in the beginning, so that if proper treatment is employed at such times the progress of the disease will be modified and the mortality greatly reduced.

TWO CASES OF MALFORMATION OF THE UTERUS.

BY

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(With one illustration.)

As diagnoses are constantly being made with more care, the profession are realizing that malformations of the female generative organs are not so uncommon as was formerly thought to be true. Four such cases were mentioned in the *AMERICAN JOURNAL OF OBSTETRICS* from September, 1905, to September, 1906. Such anomalies always are of great interest to the practitioner and are worth reporting. The two following cases were seen within a year.

Case I. Uterus Didelphys.—Miss C. H. Family history: Maternal grandparents had ten children; grandfather died at sixty-four of diabetes; grandmother at sixty-five of cancer on calf of leg. Father died of phthisis pulmonalis at age of fifty-three; mother is now living, sixty-three years old. When she was five years old had "palsy"; all her joints were permanently deformed. Right leg is shorter than left. She has a chronic interstitial nephritis and a marked degree of vitiligo; has had five children; the eldest a boy, died of "teething spasms," aged fifteen months; the second, a boy, died at fifteen of diabetes; the third, a girl, is now living and well; the fourth was stillborn; the fifth is the subject of this report.

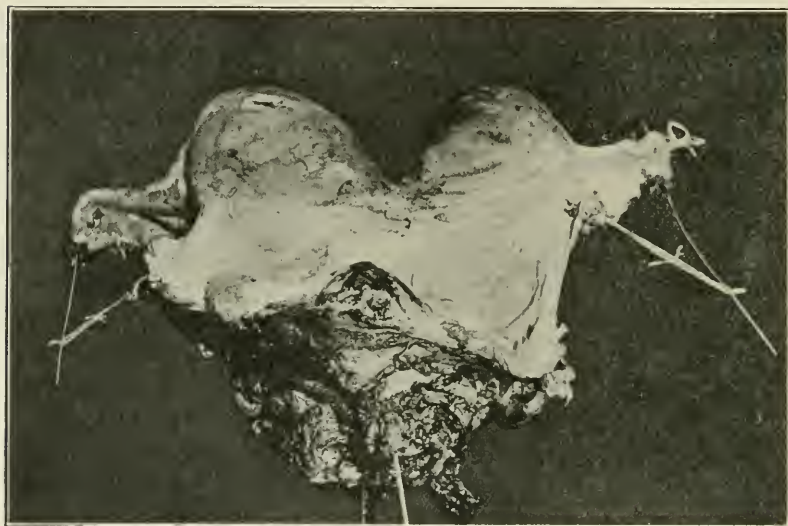
Personal History.—Age 24, slight, poorly nourished; hair scanty and extremely blond, with absence of pigment in eyelashes and eyebrows, as well as in hair of head; ears large; high vaulted palate; a marked dorsolumbar spinal curve. The finger joints are large and the fingers abnormally movable backward. The thumbs are clubbed, and on the right hand the ring finger is a quarter of an inch longer than the forefinger. The sternum is short and prominent, the neck thick and heavy, and breasts undeveloped.

The great toes are small and clubbed; the two toes next the great toes on both feet are webbed and at least a fourth of an inch longer than the great toes. All the toenails are tiny. The heart sounds give a decided mitral murmur. The first pelvic examination was made only by sense of touch and was entirely unsatisfactory, because of the small introitus and great sensitiveness. A second examination showed that the vagina was divided from before backward into two parts by a fleshy septum and that there were two ossa. Then an examination under an anesthetic was undertaken.

The left hymen was intact and was torn in the examination. The right cervix was nearer the septum and a trifle smaller than the left, and both were somewhat smaller than normal. In examining bimanually with fingers of one hand in each vagina, it was impossible to map out a fundus, but by rectum a right fundus and ovary and a left fundus and ovary could be distinctly mapped out, that is, there was a complete uterus didelphys. Two sounds were passed, one to each fundus, to an equal depth of two and a half inches. The patient married in October, 1903, and very soon became pregnant. The pregnancy ran a fairly normal course. There was some nausea and often a trace of albumen was found in the urine, but no other kidney symptoms appeared. The left vagina was the larger one and the left body was the one that enlarged, though the right body could be felt to be increasing in size somewhat. The position of the fetus was made out R. O. A.

On September 13, 1904, after thirteen and a half hours of labor, a boy was delivered normally. The vaginal septum held back the head as it descended over the perineum and was cut. The placenta had a peculiar lobulated appearance. For some time after birth the two fundi could be felt through the abdominal wall. There was a normal puerperium, except that there was no breast milk, and all means to stimulate a secretion of milk failed. The baby, a strong, lusty child, did well on modified milk. Sections from pieces of tissue expelled the day after the birth of the child showed typical decidua. On June 10, 1906, an examination disclosed a part of the septum hanging outside, between the lips of the vulva, and it was snipped off. A distinct division of the cervical canal could be felt by the examining finger within the cervix, though the examination by speculum gave the appearance of only a deeply torn cervix.

Case II. Bicornate Uterus.—In connection with the report on a uterus didelphys an account of a bicornate uterus seen the same year is of interest, the structure of which can be given exactly, as, unfortunately, the patient came to the post-mortem table. Mrs. F., aged twenty-eight, was in the seventh month of her second pregnancy. A diagnosis of twins was made before labor, which came on at that time as the result of a septic condition, with which the existing malformation had no connection. The day after the delivery of the twins examination through the abdominal walls gave a distinct feeling of a uterus with a double fundus. Death



Bicornate Uterus.

occurred ten days after delivery, from sepsis. The uterus was removed and the accompanying picture is from a photograph. Whether or not two cervixes existed before the first childbirth is unknown, as the history is not obtainable. At the time of death there was one cervix deeply lacerated and no cervical septum could be felt. The picture shows that the division began at the internal os.

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610 WEST STATE STREET.

MENSTRUAL ARTHRITIS.*

BY

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THE question of arthritis with another appellation is not brought forward to further mystify the pathology of joint affections, but to segregate, if possible, a small class of arthrites, which so far have been given scant attention.

Women are said to be attacked less frequently with rheumatism than men, supposedly on the broad ground of less exposure, but do they really suffer less, when we consider and balance up manifestations which perhaps from their obscurity are not always as they should be, put in the rheumatic column. Chorea which, comparatively speaking, is more frequent in the female, both before and after puberty, may have "such slight arthritic symptoms as to be entirely overlooked;"¹ a dysmenorrhea may be entirely relieved by considering it rheumatic and vice versa, an arthritis may be cured by attention to the menses. The preponderance of Graves' disease in the female is well known, as likewise the unstableness of the menstrual function in such cases, and the admitted interrelationship between Graves' disease and acute rheumatism. "The pertinent fact running through a series of these cases seems to indicate that the salicylates are of distinct therapeutic value in many cases of Graves' disease."²

There is a great deal about the menstrual function we do not understand. "The phenomenon since the time of Aristotle has been the subject of much speculation, and is still a question for

*Read before the Washington Obstetrical and Gynecological Society, March 1, 1907.

research ;”³ “yet nothing is known of the utility, cause, and significance of it.”⁴ Occasionally we meet a woman of perfect physical development, not by any means of the “masculine type” (Ash-ton), who has never menstruated and who never feels any disturbance from the absence of the flow, and then we see another, almost her prototype, who has to be most zealously guarded at the time of her periods, that perchance the flow may be premature, delayed, or protracted. “Every woman is a law unto herself and consequently while there is a general average by which we estimate the characteristics of the menstrual function, yet it must be borne in mind that there can be wide differences, and the only true test after all is the health of the individual.”⁵ It is even claimed that “the periodicity of the menstrual cycle in women was primarily monstrous, that is, ovulation and menstruation primarily occurred but once a year.”⁶

A series of four cases from my private practice during the past two years, which interested me most on account of an arthritis, which seemed to be strongly associated or dependent upon the menstrual function, I wish to submit for your consideration. Two of these cases, both white, might be referred to as precocious menstruation, as one began menstruating when eleven years and nine months old and the other at twelve years and five months. The two other cases, both white, were aged respectively eighteen and thirty-five years. The ones of eighteen and thirty-five years of age had suffered with rheumatism and had called my attention to the severity of the attacks when the menstrual flow was scant or tardy. The two of the precocious type had a strong inheritance of rheumatism, if that counts for anything, on their father's side. The patient of twelve years and five months old being perhaps the best to illustrate my case, I will give her history somewhat in detail :

A. E., white, female ; healthy babe, having but few of the diseases of childhood ; of a happy disposition and always sleeping and eating well ; of good size but rather stout. When twelve years and five months old was taken with headache, fever, pain, and swelling in the joints of the knees, wrists, and shoulders successively ; was put to bed, a purgative given, ichthyol applied to the joints, and a solution of salicylate of soda and citrate of potash given ; the patient was very restless and fidgety, so that bromide of sodium had to be given. The parents were told that the case

was rheumatism and no thought was given to the menstrual function. The next evening (thirty-six hours afterwards) the mother told me her daughter had called her attention to a slight discharge, which seemed to be unusual. The patient otherwise was decidedly better, both of the joint pains and the fever. Warm applications were applied over the lower abdomen and to the extremities, with the result that the discharge was increased and the patient rapidly got well.

Now, the first interesting point about this case, which holds also in the other three cases with varying conditions, is that for five months periodically these pains in the joints returned at the menstrual period and were best governed by putting the patient to bed the day before the expected menses and encouraging the menstrual flow, and sometimes administering the salicylates. With all of these cases, although they have greatly improved and will go for months without arthritic pains at the menses, still I have noticed that a scanty menstruation or the avoidance of going to bed the first day or two of the menstrual flow will often bring about fever, pain, and swelling of the joints.

Many writers have called attention to just such affections of the joints, which seem to occur periodically (*hydrops articulorum intermittens*)⁷, one class every thirty days and in some seeming to be associated with the menstrual period. The second point of interest is the consideration of menstruation as a source of infection and intoxication and the interdependence of the menstrual function on arthritic rheumatism. "Amenorrhea can be produced by the infection of rheumatism, producing atrophy of the uterus or ovaries."⁸ "A rheumatic disposition predisposes to menstrual suffering, the patient afflicted with this rheumatic form of dysmenorrhea being liable to migratory pains in different parts of the body, more especially in the joints."⁹ Riebold has been making a special study of various morbid manifestations liable to accompany menstruation. He thinks there is no doubt that the menstruating uterus may occasionally prove the source of infection for actual septic affections. Fever accompanying menstruation is by no means uncommon, and is the result of absorption of bacterial toxins or of products of decomposition through the menstruating genitalia. Still more important is the fact that infection or intoxication from the menstruating genital organs is liable to induce various forms of rheumatic affections, including

actual polyarthritis and cardiac affections of a rheumatic nature. The course of the acute menstrual articular rheumatism does not differ in any respect from the classic type, except possibly in its unusual mildness in some cases. Some typical examples of this febrile menstrual rheumatoid affection and of septic menstrual fever are related in detail. The only source for the staphylococci found in the blood in one case reported must have been the menstruating uterus. As menstruation ceased the symptoms subsided. These septic cases are rare, but undoubtedly exist and may explain certain cases of cryptogenic sepsis." "Patients who have had two, three, or more recurrences of the menstrual rheumatoid affection have been free from them in his experience when the vagina was regularly rinsed, twice a day at least, with some antiseptic fluid."¹⁰

In all of my cases, in the interval I have tried to bring about an improvement of assimilation and physical culture; have ordered a more liberal and varied diet; malt and iron have been given at times, and the patients, as they were city girls, have spent their summer vacations in the country, with the satisfaction of marked improvement to all.

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IMPERFORATE VAGINA AND ABSENCE OF ANUS.*
OPERATION SEVENTEEN HOURS AFTER BIRTH, RECOVERY.

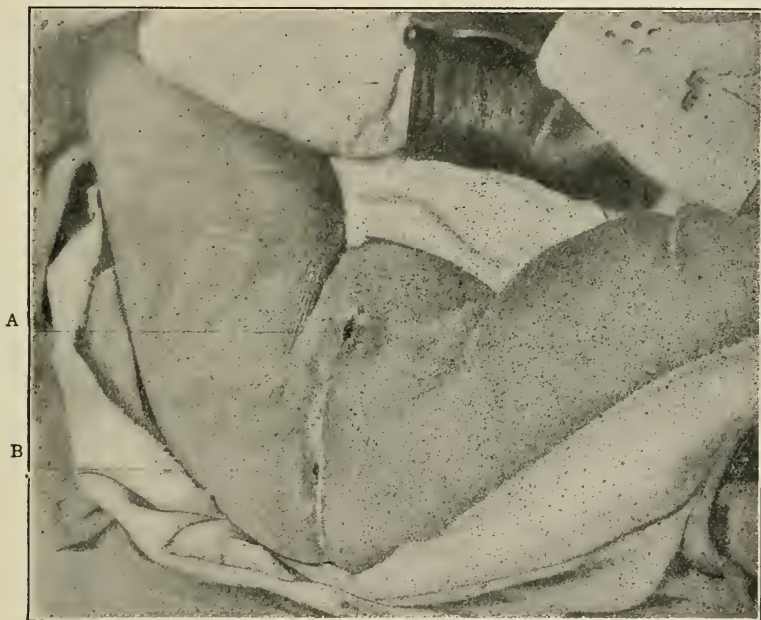
BY

EDWARD T. HARGRAVE, M.D.,

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(With illustration.)

I PRESENT this case because of its great infrequency—the literature at my disposal makes no mention of a similar instance. The



Imperforate Vagina and Absence of Anus. A, urethra; B, Anus.

child lived to be fourteen months old, in apparently good health. It had perfect control over bowel movements. There was a complete absence of any opening where the vagina should be, the minute opening above being the meatus. The history is as follows: March 2, 1906; Baby R.; white, female, 17 hours old; was admitted to St. Vincent's Hospital. Forceps were used to

*Reported before Norfolk Medical Society, June, 1906.

deliver mother on account of prolonged labor due to inertia. On admission to hospital the child's abdomen was very much distended and its general condition was bad. There was a complete absence of external genitals and anus. A minute opening found beneath the pubes proved to be the meatus. When the child was made to cry no bulging could be seen or felt in the perineum. Under chloroform the usual incision was made in front of the coccyx and deepened cautiously, avoiding going too far anteriorly. Fluctuation was carefully searched for in the wound and none was found until the peritoneal cavity was reached. A loop of gut was seized with forceps, aspirated with hypodermic syringe, and found to contain fecal matter. The gut was then dissected free from its attachments, drawn down to the opening, and two silkworm gut sutures were passed through the sides of the wound and made to enter the wall of the gut without entering its lumen, and tied. The raw surfaces were protected and the gut opened and its contents allowed to escape. The borders of the gut were united to the opening with interrupted silkworm gut, and the usual dressings applied. The child was returned to its mother (some distance from the hospital) immediately after the operation, and while it required energetic treatment to keep the little patient alive during the first twenty-four hours, after that time its recovery was uneventful and its health good until when fourteen months old it developed an acute intussusception and died.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

May 16, 1907.

The Vice-President, WENDELL C. PHILLIPS, M.D., in the Chair.

DR. GEORGE H. BALLERAY of Newark read a paper on

THE SINS OF OMISSION AND COMMISSION IN GYNECOLOGY.*

DR. EDWARD A. AYRES, in opening the discussion, said—Most gynecological diseases and injuries find origin in marital infection and obstetrical damage. What I have to say in discussing Dr. Balleray's valuable paper will be limited to our obstetrical sins.

Obstetrics is, and more truly has been, the ignored poor Cinderella of the medical sisterhood. Almost any clinical neophyte is granted the care of a woman in child-bearing, many of which would not be allowed to open a boil. We have seen quite a per cent. of our obstetric specialists first annex gynecology and then make their obstetrical work the annex. Being a poor paying medical field, and, to superficial gaze, a worked-out field, it is not even fairly mastered by its followers in the general class of practitioners. Of placid scientific character in most of its cases, it may yet shift like a cloudless summer day into a violent surgical storm. Taken all in all, I am inclined to believe that the average of results obtained in obstetrical work, compared with the entirely feasible standard that could be reached, is lower than in any branch of medicine and surgery. I wish to discuss the scientific cause for this. As Dr. Balleray's subject is a very broad one, discussion of it must be quite general in character.

The most effective service a physician can tender a pregnant woman lies in thorough antepartum diagnosis. Expertness can reduce the unexpected and unforeseen to a minimum in larger degree than in other departments of medicine, because so large a per cent. of parturientism is the same in all cases. Given an abnormality which may be expected to vary the physiological rule, foreknowledge of its existence will enable the obstetrician to minimize its evil effect. Second-class skill will get better results applied in advance than first-class skill applied in emergency. When difficult forceps traction is to be anticipated, second-class operative skill can avoid early rupture of the membranes, perhaps delay automatic rupture, wait patiently for full-head moulding, and deliver a live child with forceps; where first-class skill

*See original article, page 177.

might not avail with waters early drained away and neither full moulding, nor cervical dilatation accomplished. In emergency it may not be the fault of the first-class operator if the mother is torn and the child born dead.

The chief dangers that may develop in pregnant patients are: From placenta prævia, eclampsia, malpositions, pelvic insufficiency, and infection. Placenta prævia may not be diagnosticated, or even discovered, *if sought*; eclampsia may flash out with no warning symptoms, and malpositions may develop suddenly in labor; but such *unforseeable* occurrences are exceedingly rare in each of these abnormalities with the really expert obstetrician who has opportunity to examine in time and who applies his skill. Such an effective standard should be the aim of all obstetric practitioners. In placenta prævia a good prognosis is greatly favored by full preparation for either vaginal or Cesarean delivery, especially as compared with emergency effort applied to a severely bled patient. Location of the placenta during pregnancy is usually impossible when normally implanted, but central cases will generally cause sufficient os enlargement and lower segment softening, with possible direct palpation of the placenta at the internal os, to afford a diagnosis after the seventh month. But in practice most cases will unfortunately only be announced by hemorrhage, for the above standard is higher than obstetric practice in its innately low estate is likely to attain.

Eclampsia threatens by signs well known in urine and nervous system in over ninety per cent. of cases; and in certainly the majority of warning cases these symptoms can be expelled or delivery induced. Even states favorable to eclampsia, such as very tense abdominalia, with increased intraabdominal kidney and vascular pressure, can be kept free from fecal block, lengthened erect posture, and overfeeding to advantage for some cases which would have been charged to Providence had they reached eclampsia.

In malpositions we know that the vigor thrilling fetus does not sit up, or stand on its head, or stretch across the maternal divan, simply from passing whim. In its uterine days of youth, when it is small and the bath-tub full, it has no established attitude, for it can gyrate to its muscular desire. But when elbow-room is at a premium it will gradually shuffle itself into the most comfortable position, namely, that of least pressure and constraint. Ordinarily this is with back forward to fit the maternal lumbar curve, and head down, which is less neck flexing than the reverse. Whatever the position we might discover at the seventh month, if we found a pelvic inlet too small to allow head and cervix descent later on, we would anticipate a shoulder, or transverse, or breech presentation. Or if we found a sagging abdominal wall and uterus with relatively long transverse and short axial diameters, a face, or shoulder, or transverse presentation would be

anticipated, which sagging, if not correctable by corset support during pregnancy, would lead us to arrange for promptest attendance at labor and adjustment of the presentation as expulsive pains began to force a fixed presentation. Meddlesome antepartum obstetrics is an entity, but if we define it as wholesome ambition unsupported by sufficient skill we indicate its proper restraint. Again, second-class skill will do better in version before, or in incipient labor, than first-class skill in established malposition.

Pelvic insufficiency, which occurs in about thirteen per cent. of all cases, requires diagnostic skill acquired in the same way one masters the violin—by extensive practice. Anyone can recognize the existence of, and threat in, a two and a half inch conjugata vera after a few examinations of pregnant; but virtuosity is taxed to its limit, or overtaxed, to foretell successful forceps delivery in borderland pelvic insufficiency. Yet even here are the resources of either induced earlier labor or full preparation for alternative operations; and knowing as we all do so well, so sadly, how liable the obstetric requirements usually well met in a little man with a bar of soap and a strand of tape, are to suddenly call for the highest surgical skill; is it not criminal to remain incompetent if indifference explains our insufficiency? An osteopath is better justified in enticing the unwary than a member of our profession to practice obstetrics who cannot, or has not, reasonably mastered pelvic, uterine, and fetal mensuration.

Infection threatens with the obstetrician more than with any other operator. Difficult to control at all times, it can be given poor consideration when a woman is bleeding to death, or in the throes of eclampsia, or far spent in futile expulsive efforts, and especially when met in any and all kinds of domestic surgical makeshifts. Preliminary full diagnosis, the kind that gives an expert obstetrician more than a peep into the future, removes most dangerous of infection.

This is a highly condensed summary of the most vital features of obstetric practice which are peculiarly subject to improvement through timely diagnosis. There are many other important details worthy of mention, if time afforded, but these just mentioned cover most of the field of our "sins of omission." A study of our census vital statistics impresses us with the thought that a peculiarly vitalized responsibility is fast falling upon obstetrical service. Notwithstanding that every influence favoring a prosperous birth rate seems to present to our people, it is an astonishing fact that but for immigration we would be almost on a par with France in birth and death equilibrium, and this in spite of a steadily lowered death rate. The gradual decline in the average of children per family from six to eight in revolutionary times to only two amongst our native class is not due to obstetrical shortcomings, nor can it be measurably checked by preaching against reproductive restriction. but this serious evil

can be most corrected by larger reduction of fetal and early infant mortality which lie wholly within the scope of obstetrics. With a still-birth mortality of six or seven per cent. added to ten per cent. of infantile deaths within the first month, and fifteen per cent. additional by end of the year, or about one reproductive failure in two successes, we see at once how large an impress can be made on declining birth rates by improving our obstetric work. Children specialists are making deep inroads on infant death rates, but chiefly through artificial nursing. For a mother to be obliged to dry up a splendid milk supply because obstetric blundering has caused her living child to die at life's threshold is to charge us with a crime against nature.

As to the "sins of commission" in obstetrics time will not permit a reading of the list. An obstetrical meddler might be defined as one who assists Nature at the wrong time. To give ergot at any time, or to rupture the membranes without knowing how or when a labor should be terminated, performances that are most apt to apply in contracted pelvis cases, and just where they should not, is childlike, but not bland. To institute artificial dilatation of the cervix for reasons of impatience, or misinterpretation of preliminary for strenuous contractions, or to apply forceps traction with greater regard for securing fetal advance than for cervical endurance, to make any greater compression of the fetal head with forceps blades than blade-slipping problems require, or to needlessly use the forceps, to allow the womb and its voluntary reinforcements to decide speed rates when fetal heads are coming around the curve; to keep the knees flexed against the abdomen when the head crowns the perineum, to try to preserve perineal integrity without seeing the parts, to not know that a uterus is exhausted and permit it to bleed first and each time make compression afterwards, to postpone perineal stitching that can be sewed at the time, to douche an aseptic vagina, to keep a postpartum patient flat on her back, when uterine circulation is stagnant, or sit her up when it will increase lochial flow, to allow quiescent breasts to suddenly overfill and cake, to omit treating the nipples as open wounds, to curette a clean uterus, or not curette away placental remnants, which goes back to lack of care in securing complete expression originally, to allow a milk-full mother to avoid suckling her child, without protest, and so on and so forth, is to fall short of our opportunities for good.

Judgment, art, diagnosis, but the greatest of these is diagnosis, early, accurate, and full.

It seems unlikely that reading a catalogue of our obstetrical shortcomings will be informing to members of this academy; but I cannot avoid taking advantage of this opportunity to emphasize one crying need of the times in obstetrics. Having no personal interest to threaten bias, and having had every opportunity to form a correct judgment, I am profoundly of the opin-

ion that no medical student should be licensed to practice obstetrics until he has acquired reasonable skill in clinical work, and especially in antepartum diagnosis.

DR. WILLIAM M. POLK.—I am glad to respond to Dr. Balleray's invitation to come here this evening, for it offers an opportunity for the Academy to realize that there is after all a great deal yet to be done in the department of obstetrics. Belonging to that class of practitioners who have abandoned obstetrics for gynecology, I feel that I am somewhat hampered in making suggestions after having heard Dr. Balleray and Dr. Ayers. Therefore, I shall confine myself to noticing a few points which seem of interest.

In the first place the doctor is quite positive that cancer of the vaginal cervix has not been observed, but proof can be given that the doctor is probably in error in that statement. So far as my personal observation goes I can assert that cases of that kind have come under observation. Also, as regards the suggestion made of a possible falsification of the records on the part of the sufferer, this tends somewhat to cut the ground from beneath the feet of those of us who are disposed to take her statement, checked by careful examination of the cervix itself, as being proof that the case had been properly diagnosed. We all realize that trauma may play a part in the causation of carcinoma of the cervix; undoubtedly it does, but there are other causative factors. Obstetrics has done immensely better since it has been brought squarely within the surgical field. We all know how the subject has been tossed from one side of the practice of medicine, including surgery, to the other, and how the medical men declared they did not require the services of the professional surgical man. I speak of what I know, for I was in work when the feeling was at its acme. They were between two forces, and it was only when aseptic methods were developed that they were able to decide that good work was to be done in surgical procedures. That having been done, it seems to me that the problems have grown less and less.

Dr. Balleray's insistence of one month in bed after delivery is not always necessary. The only law that can be laid down for each case is that it should be treated on its individual merits. With that understanding there is no question, in cases of extensive lacerations, but that the patient will do better if allowed to get up early than if kept in bed too long.

I am obliged to the doctor for having laid stress upon the fact that rupture of external parts during confinement is a thing which is too often unavoidable. I think there are a good many men here who have practiced obstetrics as long as I have who have come face to face with reproach in not being able to save the patient's perineum. Again they have been often congratulated because the external parts were in good condition, when exactly the reverse was the true state of affairs. Often people

come up for operation in anger against the doctor who attended them; whereas in reality the doctor did the best that circumstances would permit. Many of us are likely to get ourselves into trouble from conditions that were not apparent at the time of confinement itself. Recognizing that fact, and recognizing the underlying conditions, we would be in a better position to do justice to all parties.

The statement of Dr. Ayers that an antepartum diagnosis is of great value is one that all will heartily applaud. If there is anything sadder than another it is to be called in consultation to find that a man has blundered; that in a case of justo-minor pelvis he had allowed the patient to go on to full term, and all then one could do would be to sacrifice the child, or lacerate the woman, or do both. Again, you have been called to the bedside to see a woman suffering from eclampsia; if proper records of the case had been kept, and the treatment pursued along certain lines, the patient would have survived a danger that was crushing her.

I did not hear anybody speak of scraping the inside of a recently pregnant uterus or after an abortion. We have all talked about this thing amongst ourselves for a long time, but I suppose we have not spoken loud enough, or with sufficient authority; nothing is more common than to be called in to deal with a case of traumatism of the uterus dependent upon injudicious and improper use of the curette. These people come to you and say, "I have had a miscarriage and had a scraping done." That is the word they use. If there ever was any villainous procedure, and I think I am justified in the use of that term, that is the systematic scraping out of a recently pregnant uterus. Even in cases where there is a contraction of the internal os with difficulty in introducing the finger to remove any retained secundines, it is not necessary to scrape around inside that organ.

Dr. EDWIN B. CRAGIN.—Speaking of sins of omission and sins of commission in gynecology, in looking back over the work as I have seen it, and seeing both phases, I think it would be better to speak of the sins of omission in obstetrics, and the sins of commission in gynecology. The ground has been so carefully covered to-night that I shall lay stress only upon one or two points.

In the first place Dr. Balleray states that he keeps the patient in bed for a month after delivery and uses hot douches during that time. I presume that if I kept a patient in bed for a month I should want to use hot douches. But in looking over the work at the Sloane Maternity we have been led to get the patients up a little early rather than to keep them in bed beyond the normal time of nine or ten days for the reason that we found that retroversions were extremely common. If we sent these patients out in two weeks, which is our rule, and it is often hard to keep them there as long as that even, many would go with retroversions if

most of this time was spent in bed. At present all sit up in bed as early as the fifth day and they are out of bed on the ninth day, and it has been observed that posterior displacements of the uterus are less common than when they remained in bed longer, for the reason that once the ligaments are stretched the position on the back favors posterior displacement and, once started, it is only a matter of time when the displacement becomes worse and worse.

In regard to the healing of the cervix, I believe that the cervix will do as well and even better if the patient is allowed to get up so that the parturient canal will drain and keep clean; this is better than the use of douches, which carry with them the risk of infection. Therefore, I take issue with Dr. Balleray on the length of time the patient should be allowed to remain in bed after confinement. But I think that Dr. Polk has pointed out the truth when he said that each case must be decided upon its merits. Some of the people on Eleventh avenue have uteri which will involute in five days, while those on Fifth avenue have uteri which require from ten to fifteen days to involute to the same extent. When the uteri have decreased sufficiently in size and weight, with a corresponding decrease in the discharge of the lochia, these are the evidences which should permit the women to get up, and not the length of time they have been in the hospital.

With regard to the repair of lacerations of the perineum, one of the men who had a three months' service at the Sloane Maternity made the remark that he went through his service without meeting with a laceration of the perineum. I looked at the man and in speaking of him afterwards made the remark, "He either was not an observer or else he did not speak the truth." I do not think it is possible for a man to go through a three months' active obstetric service, with from 120 to 150 cases a month, and not meet with a laceration of the perineum. It might have been that he did not make a thorough inspection. But one who never saw a laceration of the perineum with so many cases, and in such a length of time, is really a marvel.

With regard to lacerations of the cervix, I confess that I am afraid to teach students to make repairs of these immediately after labor. If it is an operative case, with assistants, full anesthesia, and with a good light, I believe in the repair of these cervixes immediately after labor if the laceration is extensive. But without proper assistants, with poor light, to expose that cervix to see if it is lacerated, and then to repair it, is, I think, accompanied by danger, and students should not be taught to do it. I have seen three cases within a year, badly infected, in which the cervixes were exposed and sewn too tightly, and this operation seemed to be the cause of the infection. For that reason, unless a man has had experience in the repair of lacerated cervixes, with a good light and assistants, and unless there is hemorrhage, I believe it is safer to leave these tears alone and allow cleanliness and good drainage to bring about the repair possible. It seems to

me that, as I see the work in the city, one of the greatest sins of commission in gynecology has to deal with lacerations of the cervix. It is not the operation itself, but it is the advice to have a little bit of a laceration of the cervix repaired. A great many who have come to me have been advised to have their lacerated cervix repaired; and yet on examination I must say that in many of them I could hardly find the laceration. If a woman has a little nick in her cervix, with the squamous epithelium covering everything nicely, with no subinvolution of the uterus, with no increase in menstruation or cervical catarrh, my own practice is to leave it alone. If I am to attend her in her next confinement I hope that both my friends and my enemies will leave the cervix alone. I believe that these women do better without having their cervical canals narrowed and drainage interfered with.

I believe that Dr. Polk and I agree in our ideas regarding the treatment of incomplete abortion, and yet I am not quite sure, and lest somebody else should misunderstand Dr. Polk, as I am afraid I misunderstood him, I wish to make my position clear. I do not know whether Dr. Polk meant to say that after abortion or miscarriage, if the secundines were left in the uterus, he would leave the uterus alone or not. But if he did it would be contrary to my practice and to my belief. I believe in handling the inside of the uterus as gently as possible, but I believe in getting the uterus free of secundines after a miscarriage or abortion. If I can find that there is a portion of the ovum not discharged, or if that woman continues to bleed, I believe it is the proper procedure, as gently as possible, with the finger if possible, or with the curette if necessary, to free that uterus from secundines before pronouncing that she is safe and in need of no further treatment.

DR. J. RIDDLE GOFFE.—I do not fancy the title of this paper. The author evidently has not discovered any sins of the gynecologist, but has presented to us the sins of the obstetrician as viewed by the gynecologist. This is an arraignment of the obstetrician. Dr. Balleray would give a more correct impression if he should change the title of his paper accordingly. The general subject has been very thoroughly covered and there is only left for the remaining speakers to mention specific instances or conditions.

Dr. Cragin has emphasized the importance of involution of the uterus following labor, and I want to add involution of the ligaments as well. Involution of the uterus and involution of the ligaments should progress *pari passu*. We are apt to forget that these ligaments are muscular prolongations of the uterine tissue, that they hypertrophy as the uterus hypertrophies, and they must involute as the uterus involutes. It is the duty of the obstetrician to watch this involution of uterus and ligaments and make sure that the ligaments are capable of sustaining the uterus before the patient leaves his hands.

I think we are all under great obligation to Dr. Ayers for the clear and emphatic enunciation of the importance of antepartum diagnosis.

There is one thing I wish to dwell upon just a little because it concerns a subject that I have been interested in; I refer to the cause of cystocele. As you all know, Hart and Barbour presented some years ago a clear description of the function of the floor of the pelvis, dividing it into sacral and pubic segments. They described it as the closing together of two doors, one of which during parturition opens up into the pelvis, the other opens down and out. A very important point to be remembered, it seems to me, by obstetricians, in the prevention of cystocele, is to make sure that the pubic segment opens up into the pelvis while the sacral segments open out, the line of cleavage between the two being the axis of the vagina and uterus.

Among the sins of commission in gynecology there is the tendency in the last few years for the gynecologist, as well as the general surgeon, to insist, when the abdominal cavity is opened for any purpose, upon removal of the appendix. This, I think, is carrying the matter of prophylaxis too far. The old surgical rule still holds good that no tissue or organ should be removed that does not offend. To be sure we do not know the function of the appendix; it may not have any; but there have been times when we did not know the function of the thyroid gland, or the suprarenal gland, and yet no man would think of removing them to-day, because of the discovery of important functions connected with them. It is possible that in the future some important function will be ascribed to the appendix. The old rule of noninterference with tissue that is not diseased is a rule that holds in this instance. There is another objection to removing the appendix when it is healthy, and it is that there is an added danger to the operation. I know of at least two cases in this city in which death followed operations on the pelvic organs which had been amplified by an operation upon a healthy appendix. In one case, to my personal knowledge, the woman died from peritonitis in which the culture showed a pure infection of the colon bacillus. The other case I am not so familiar with. I would like to call a halt upon the practice of removing healthy appendices when the abdomen is opened for other causes.

DR. BROOKS H. WELLS.—I have listened to Dr. Balleray's paper with interest. He enters a field that offers many and wide opportunities for discussion. Of these I shall have time to consider only those which seem to me the most important.

Dr. Balleray's first sins of omission are those that, as he states, "are due to the negligence of the medical attendant during the four weeks immediately following delivery," to the omission of the vaginal douche, and the custom of allowing the patient to leave her bed about the ninth day.

I should qualify the reader's statement by saying that his criti-

cism should begin with or even before the beginning of labor. That if the labor be managed with ordinary skill and care as to the maintenance of asepsis, if the attendant refrain from unnecessary vaginal examinations or manipulations of the cervix and keeps the external parts clean during the puerperium by instructing his nurse as to the manner and intervals of washing and the frequency with which the vulvar pad is to be changed he will not very frequently have fetid lochia or sepsis, and I submit that from practical experience and our knowledge of the bacteriology of the vagina the average patient is better off without the vaginal douche.

It is a well established fact in which all obstetricians agree that the practitioner should be prepared with sterile needles and suture materials and that tears of the perineum and vagina should be looked for at the end of the labor and sutured if found, except when the parts are so contused and edematous that operation seems out of the question. Tears of the cervix do not need immediate suture unless so deep as to cause persistent hemorrhage. Where the patient has suffered deep perineal tears she should be kept off her feet until the laceration has healed, otherwise she is better if allowed to sit up in bed or on a commode during defecation and micturition as this posture effectually frees the vagina from clots and lochia.

Where retroversion and prolapse is found after labor I do not believe that the attendant should be often blamed for it or that it is caused by too tight a binder or too early rising from bed. In the great majority of these cases the displacement was present before, and would have been found previous to or in the early months of pregnancy had it been looked for. I agree with Dr. Balleray that the attendant should be held remiss if he neglects to make the post-*puerperal* examination that will enable him to recognize pathological conditions that may be present, so that he may institute the proper treatment for their relief.

Every cervix suffers some solution of continuity in a first labor, some are torn deeply.

The causes of deep laceration of the cervix can be broadly divided into two groups—the traumatism of instrumental or manual delivery and chronic endometritis, or more properly, metritis. The tear in a healthy cervix from external force will often heal, especially when healing is favored by asepsis and rest; the tear from chronic disease is apt not to heal, or, if it seems healed at first, later we find an apparently deeper tear and eversion from the thickening of the diseased endometrium. This thickening from endometrial infection may even produce a condition simulating a tear in women who have never borne children, or who are undoubted virgins, a condition that I have noted many times.

As to the remarks of the author on gonorrhea, I will agree as to the very great importance of the disease in causing severe and destructive pelvic lesions. I will also agree that if it could be rigorously attacked *while limited to the vulva and vagina* nearly all women could be promptly cured, *but* gonorrhea limited to the vulva and vagina is extremely rare, as its points of incidence are usually the urethra or the cervical endometrium, either one or both. Many women have gonorrhea which never produces noticeable symptoms, and in most instances the disease is snugly established in the urethra or endometrium before it is discovered; and then its treatment is not so simple.

Dr. Balleray states that "neglected lacerations of the cervix are responsible for the occurrence of cancer of that portion of the uterus," and that where there is no traumatism there is no cancer.

I believe that this statement is true to only a very limited extent. Of the women who reach the cancer age a very small minority have remained virgins or nulliparæ. If the proportion of cancer in virgin cervixes were the same as in other women of the same age, cancer in the nullipara would still be very rare. I have personally seen three cases of cancer in undoubted nulliparous cervixes, two of the women were virgins, and the third one had only had sexual intercourse for a short time. In all these cases the diagnosis was confirmed by careful microscopical examination of the removed uterus. Lacerated cervix and certain other conditions of chronic irritation supposed to predispose to cancer, when studied in very large numbers, can be shown to have little or no causative influence.

Of course this does not mean that cervical injuries should not be repaired, but only that we should not overestimate their influence in the causation of cancer.

I would like to emphasize most forcibly all that Dr. Balleray says of the great danger of attributing the first symptoms of uterine cancer to "change of life." I would have the facts of the early symptoms of cancer familiar not only to the physician but to the laity, for in this disease early recognition and efficient treatment give the only hope. In no other condition are the words of the Rubaiyat more true:

"The moving finger writes, and having writ
Moves on: Nor all your Piety nor Wit
Shall lure it back to cancel half a line,
Nor all your tears wash out a Word of it."

Dr. Balleray says: "The sins of commission are the sins of the operative gynecologist; he does the things he ought not to do. At times he is thoroughly honest in his conviction that he is doing right (Does that statement apply to all gynecologists or only to Dr. Balleray?), but in many cases mutilating operations are performed which are entirely unjustifiable and have absolutely no *raison d'être* except the love of éclat and the undying fondness which some men cherish for operative gynecology."

Gentlemen, I am proud to consider myself a gynecologist. I feel that I am a representative of an honorable specialty, and one that has contributed its full quota to the advancement of the science and the art of medicine; as such it pains me to hear the frequent and sweeping criticisms that have recently become so fashionable.

I believe that there are no more who are dishonest, no more who are ignorant, no more who are misguided enthusiasts among those who are trained in gynecology, than there are among those who are competent specialists in other lines. The evils that are truly criticised are more the evils of the amateur than the specialist. I will admit, as Barrett of Chicago has said, in eloquently defending his specialty, that this is the every-man-his-own-surgeon and the every-surgeon-his-own-gynecologist age, and that the prevalent criticism "looks very much like an effort on the part of those who have prophesied the passing of the specialty to make the prophecy come true."

But when the pendulum swings far one way it comes back with added force.

To quote again: "The question is not whether the gynecologist can do better stomach surgery than the specialist in that line, or better brain surgery than the one who has devoted his attention to that line, or better ear surgery than the aurist, but rather, can he treat the diseases of the pelvic organs of women more judiciously than can one who has not made special study of those diseases? If he cannot, he deserves to pass. If knowledge counts for nothing, he stands an even chance of passing. Already the general surgeon finds the field too large for one man's capacity, and makes his reputation by concentration on some branch of the work. As long as time and man's capacity are limited, there will be specialties, and no one can prohibit them by criticism or by ridicule. Every such criticism publishes the fact that we are willing to see medical education and medical science make a step backward. One cannot do the best work in a certain line without specializing, and there are always many who want the best."

Therefore do I deplore the criticism that is not helpful; the criticism that is but a "glittering generality," and the criticism that reflects on the honor of the specialty.

DR. LOUIS J. LADINSKI.—The subject has been so thoroughly covered in the discussion that I would be guilty of repeating what has been said already if I did more than emphasize a few points.

I agree entirely with the remarks of Dr. Cragin in reference to the time the puerperal woman is to be confined to bed, and I only desire to point out the fact, and what is a well-known surgical rule, that cut or torn surfaces will heal primarily only if union takes place at once or shortly after the wound has been made. That is also true of lacerations of the cervix; if a laceration of the cervix has not healed within one week it will not heal at all, whether the patient is in bed or not.

I therefore cannot agree with Dr. Balleray that keeping the patient in bed for weeks will favor the healing of a torn cervix, nor can I agree with him that vaginal douches will tend to promote union; on the contrary, repeated douching will only interfere with the adaptation and union of the lacerated surfaces of the cervix.

As regards the primary or immediate trachelorrhaphy, I am of the same opinion as Dr. Cragin, that even specialists should not undertake this operation unless practised under the most favorable conditions as regards asepsis, equipment, and assistance. It would not be safe to advise the general practitioner to do this operation as a routine, especially at the home of the patients.

It is different with a laceration of the perineum; I am in favor of advising that primary or immediate perineorrhaphy be done in every instance, either by the general practitioner or specialist, but in my opinion it is far better and safer to allow a torn perineum to remain unrepaired than to have it done by those who have not had sufficient experience in this line of work. You and I have seen a number of instances of sepsis that were directly traceable to the perineorrhaphy.

As to cancer of the cervix, if I am to judge from statistics compiled from my own clinical material, which has been sufficiently large to justify conclusions, I would say that the class of patients that came under my observation seem to be, not only immune to a certain extent from carcinoma of the cervix, but that lacerations of the cervix play very little part as a causative factor of carcinoma.

The number of cases of laceration of the cervix that I have seen in my various clinics is legion, while I have seen but comparatively few cases of cancer of the cervix. If a laceration of the cervix was a factor in the production of carcinoma of the cervix, even to a slight degree, I certainly would have seen a much larger number of cases of carcinoma of the cervix.

As a matter of fact of the comparatively few cases of carcinoma of the cervix that were observed by me two cases occurred in positively nulliparous women; one of which was seen with me by the late Dr. Munde.

Of course, I do not want to be understood as advising against the repair of lacerations of the cervix; on the contrary, with the exception of the slight tears mentioned by Dr. Cragin, I am in favor of repairing every cervix that is lacerated, hypertrophied, or everted, not only because I believe that this condition produces symptoms at all times, but also because if every cervix that is lacerated, everted, or eroded were looked upon by the general practitioner as a pathological condition requiring attention, I am confident that many cases of early cancer of the cervix, which is usually mistaken for the former condition, would be discovered in time, and possibly be saved by early operation.

In fact, it frequently happens that cases of early carcinoma of

the cervix that finally come under the care of the specialist have been previously treated as cases of benign erosion or eversion.

As regards the statement about gonorrheal infection, I had hoped to hear Dr. Balleray tell us how to treat gonorrheal infection of the female generative organs. I agree with him that they should all be treated and treated early, but the doctor has not given us a single suggestion as to any way or method of treating gonorrheal infections of the external genitals, so as to prevent the pelvic organs from becoming diseased. Frequently without any external evidences we find that not only the endometrium is the seat of infection, but the tubes, and even the peritoneal cavity has also been involved.

So far as the sins of commission as regard removal of the uterus and tubes and ovaries that are not diseased is concerned, it requires no emphasis on my part to say that there is absolutely no justification in removing uteri containing a little nodule, or a little fibroid, or an ovary absolutely or nearly normal.

DR. ROBERT T. MORRIS.—I am delighted to have the gynecologists come over to my side in this matter of leaving the normal appendix alone when it happens to appear in the field of some other operation. I am glad to hear of the two deaths reported by Dr. Goffe. I have all along predicted this very thing—that an unnecessary death rate would come out of removal of normal appendices. The normal appendix is not to be left alone on the ground stated by Dr. Goffe, that it may be of some unknown use. The appendix is of no use excepting to the struggling doctor. There is a principle involved, and it is this: When we open the lumen of the normal appendix, we open a direct spigot of infection for the peritoneum, at a time when the peritoneum is not prepared for self protection. When there is real infection of the appendix, be it ever so slight, a protective leucocytosis is called out rapidly, and we can then do a great deal with the appendix safely. With a perfectly normal appendix there is no protection at all from this spigot invasion of infection, and I know that in spite of all of my own resources I would get a death rate out of this sort of work if I were to operate just often enough. I have been a voice crying in the wilderness in this matter for years.

Concerning the matter of primary trachelorrhaphy, there is another situation involving a principle. The patient's protection lies in the lochia, loaded with nucleins and other elements prepared by nature with such care that a woman may have fourteen children in the dirtiest hovel, where bacteria and other things up to the size of a chicken alighting upon the mother's knee attend the parturition—and without infection occurring. If the perineum or cervix, or both, are injured, the protection then comes from the lochia, and under its beneficent influence repair goes on so rapidly that nice judgment is required for doing the right thing, and not the meddlesome thing. If one closes a tear in the cervix immediately, and includes a little nidus of infection in the depths of the wound,

he places it out of the current of protection from the lochia. Immediate repair of the cervix and perineum may be done to advantage if properly done, but I see a good many results of careless work, where it would have been better to have left primary protection to the lochia.

With regard to the question of repair of old scars of the cervix, when there is doubt about the necessity for procedure, what has become of Emmet's sign? I consider this of determining consequence in my own decisions. If we press against a cervix scar with a probe or with the finger nail, and if there follows an immediate reflex to the lumbar plexuses, or if the patient complains of the local pain, there is good presumptive evidence that the scar is a persistent source of disturbance, and that it requires attention on account of nerve filaments entrapped in the scar. On the other hand, if we go over scars in this way, and get no response, we can generally leave those scars alone, unless there are erosions, or eversion of mucosa of sufficient importance to call for surgical repair.

It seems to me that these little principles should receive more attention than they have received in this discussion.

DR. CHARLES L. DANA.—I have noticed one thing, which Dr. Balleray has referred to, and which, it seems to me, the discussion emphasized, namely, that obstetrics has now become definitely surgical. The discussion to-night has been limited almost absolutely to questions of surgery. Therefore, I think that perhaps it may not be useless for me to refer to one or two points that we as physicians, and I as a neurologist, have had attention called to.

For example, in my observation I have found that in a large percentage of backward children, imbeciles, and idiots, the trouble was not due to their heredity, but to some defect in the health of the pregnant mother, or some injury to the child during the parturient process. In looking over my own statistics recently, I found—contrary to the ordinary belief—that alcohol was the cause of idiocy in only 5 per cent. The real cause of the condition in many cases seemed to be some condition of bad nutrition, or trauma, or psychical shock, or serious mental strain to which the mother was subjected. It seems to me that an obstetrician should look more carefully into this side of the question. He should not simply examine the urine, the breasts, and measure the diameters of the pelvis, but should see if anything in the mode of life of the parents was wrong. Neurologists meet with birth-arm palsies, epilepsy, cerebral hemorrhages, hemiplegias, defective mental development, etc., due to conditions which occur at birth, and some of which might be relieved by surgical interference. When a child is born and has general convulsions on the second, third, fourth, or fifth day, the cause is probably meningeal hemorrhage, and Cushing asserts that in these cases the skull should be opened and the hemorrhage washed out. By this means it may be possible to restore the child to the normal condition. It seems to me this is a very important point to bring to the attention of the obstetrician.

As regards the work of the gynecologist, I can remember the day when we all sought him with the hope that he could relieve the women of their neuroses or psychoses. And the gynecologists responded most kindly. They, indeed, rather overwhelmed us with attentions until we had to take the defensive and gradually assumed an attitude of hostility to the knife. They were taking out uteri, sewing up tears, curetting, etc., but they did not seem to accomplish results. This attitude prevailed for a long time. But in recent years we are getting to feel more kindly towards them; the attitude of the neurologists has changed; far better results are now had than were gotten years ago. I have often asked neurotic patients what have been the results of various operations they have had, and it has come to me as a positive conclusion that, in a large proportion of the cases of so-called psychoneuroses, operations for the relief of subinvolution, tears, the removal of scars, did not really do any good, but often did positive harm.

I have tried to formulate some rule in regard to the question whether or not a neuropathic woman should be operated upon, that is, for the relief of some local irritation, not for serious conditions, any more than a trivial operation. Our ideas regarding neurasthenia have been somewhat changed. What used to be called neurasthenia may now be divided into (1) psychoneuroses group, (2) hypochondriacal group, and (3) the ordinary group of neurasthenics. In the first group, in people with obsessions, the so-called psychosthenic operations are generally unsafe; you may cure them of back or pelvic pains, or special neuralgias, but they get up something else. Therefore, I do not advise operation in this class of patients. In the second group, the hypochondriacal, you can relieve the local conditions, but you cannot relieve the psychic condition. But, on the other hand, in the group of simple neurasthenics, where the patients are made physically ill by irritations in the pelvis, operations are extremely helpful.

DR. EDWARD A. AYERS.—I should like to offer one suggestion that has been brought up by Dr. Dana. I cannot state the exact authority just now, but it is to this effect, that everywhere throughout the world, cases of epilepsy average 1 to 6 per thousand. The statistics of the English lying-in institutions show that where the mothers, during the pregnant state, were accustomed to overindulgence in alcohol, the percentage of epileptics was from 40 to 50 per thousand among the infants born. It was also shown that, when the mother was intoxicated, the fetus in utero might absorb seven-eighths of an ounce of alcohol. Such evidence as this shows that certain forms of nervous maladies have a direct relationship to the condition of the mother.

DR. GEORGE H. BALLERAY.—I wish to thank the gentlemen who came here to discuss my paper on such a stormy night. I am

sorry that Dr. Dana did not express his views in regard to the removal of the uterine appendages, of one or both sides, for pelvic aches and pains in neurasthenic women. Removal of normal, or nearly normal, appendages for such conditions is, in my judgment, an unjustifiable operation. Such cases are not cured by the operation, and many of them are made worse. After such an operation it is difficult to draw the woman's mind out of her pelvis, and she often becomes a hypochondriac. I agree with Dr. Polk when he says that curettage, in the case of a recently delivered woman, or immediately after an abortion, for the removal of placental remains, is "villainous." I never use the curette in such conditions, and consider that in the hands of the average practitioner it is an abomination. I have witnessed several autopsies of patients who died of sepsis after curettage for the removal of portions of placenta. In each case the operator had left considerable portions of placenta behind, while at the same time he had scraped away a certain amount of the uterine wall. There may be more expeditious ways of killing a patient, but there are few more efficient.

The hand is the only instrument that should ever be used to remove retained placenta—the patient being anesthetized if necessary. This, of course, does not apply to small placental remains after abortion which cause irregular hemorrhages for weeks or months afterwards. In such cases sharp curettage, irrigation, and uterine tamponade are the only efficient remedies. The discussion seems to have gotten off the track. I started off on the sins of omission and commission of the gynecologist, but we have drifted to the sins of the general practitioner in obstetrics. This is a broad subject and would require a protracted séance for its full consideration. As regards cancer of the virginal cervix, I am glad to hear Dr. Wells state that he has seen three cases. In a practice extending over thirty-five years I have seen a great many cases of cancer of the cervix uteri, but never have I seen a case of cancer of the truly virginal cervix. I have always believed that cases reported as such, occurring in old maids and nulliparous married women, were in reality cases of cancer of the body of the uterus in which the cancerous growth became extruded through the cervix and deceived the observer. Possibly Dr. Wells' experience may help my unbelief.

When the cervix uteri is the seat of carcinoma an early diagnosis, followed promptly by vaginal hysterectomy, will save many lives. Some of my cases, operated upon seven, eight, and nine years ago, are in perfect health to-day. It is the failure to make an early diagnosis that is responsible for the terrible mortality in this disease. Cases are generally referred to the surgeon long after they have passed the operable stage. If the family physician can be aroused from his lethargy, and stimulated to make a careful examination of every case presenting suspicious signs or symptoms of uterine cancer, and will promptly refer the case to a skillful operator, he will confer a blessing upon the unfortunate

victims of this horrible disease. With regard to operation on the appendix when the surgeon has opened the abdominal cavity for pelvic disease, I believe that if the appendix is a normal one it should be let alone. It is, to my mind, an unjustifiable procedure to remove a healthy appendix. Meddlesome surgery is as bad as meddlesome midwifery.

Dr. Cragin objects to keeping the puerperal woman in bed in the recumbent posture for a considerable length of time, as I have advised, because it favors retroflexion or retroversion of the sub-involuted uterus. His objection would be valid if it was proposed to keep the woman in the dorsal decubitus all the time. This I do not do. I always allow these patients a certain amount of freedom of motion, merely requiring that they shall maintain the recumbent posture. In my paper I have stated what the real causes of retroversion and retroflexion are, and I maintain that the recumbent posture and the use of large, hot vaginal douches favor rapid involution, and the healing of lacerations of the cervix, and thereby prevent, instead of causing, uterine displacements. In my advocacy of the use of douches before and after labor, I know that I am an Ishmael, "his hand against every man, and every man's hand against him," but my attitude on this matter is based upon observation and experience—not hearsay evidence—and I shall not change it until I am convinced that I am wrong, and the man who can convince me is not yet born—and never will be.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of April 23, 1907.

The President, DR. PINKHAM, in the Chair.

DR. HYDE read a paper on

CONSERVATIVE OVARIAN SURGERY.*

DR. BROWN.—I feel as Dr. Hyde does, that where we have ovaries with a number of small cysts we had best leave them alone. If the ovary is the seat of a marked cystic disease, it should be removed. I do not think that we should discuss with the patient whether we ought to do a conservative operation, but do what we think is best. I do not believe in leaving parts of ovaries. Where we find the disease sufficient to remove a part of the ovary, a whole ovary is better out. It is safer for the patient and we get better results. The habit which we have of

*See original article, page 145.

attempting to save a small fringe of an ovary I do not believe give us the best results. When the patient comes to us she comes to be relieved of symptoms, to be restored to health, so she can be useful to her family and to her friends, and I do not believe that we are doing right to save just a portion of the ovary in order to retain menstruation. I do not believe it is good judgment. A clear instance of that, though of course it is but one case, happened recently. Some two months ago I assisted a surgeon in an abdominal section. One ovary was partly cystic and we removed it. The other ovary was almost as much so. After considerable consultation with those standing around it was decided (I was in the minority) that a portion of that ovary should be left. It was left. Within three weeks he was called on to operate a second time, and he removed the remains of the ovary that he left behind, which had developed into a cyst.

DR. BISSELL.—I do not quite understand how Dr. Broun can avoid discussing the subject with his patients. In fact, I think it is within their right to ask any question and express their wishes. I always assure them that I will remove nothing that Nature has not already practically destroyed, and that all functioning tissue will be saved—not that they must remember that this tissue is subject to possible pathological changes.

Much has been said about the recurrence of disease in ovarian tissue when left. I am of the opinion that the liability to diseases in this tissue is no greater than in the ovary we believe normal from a macroscopic examination and allowed to remain *in situ*. It would be interesting to know just how many normal ovaries have been replaced and subsequently operated on. In my own experience I can recall two such cases: In the first I removed a dermoid cyst of considerable size from the left ovary, saving a small, healthy portion of the ovarian structure. The right ovary appeared healthy and was not disturbed. One year after it became necessary for me to remove the entire right ovary, which had become the seat of multiple cysts. In the second case I removed a fibroid of the right ovary. The uterus and left ovary appeared normal, but within less than two years I had to remove a large fibroid of the uterus and the entire left ovary because of multiple cysts. But, surely, no one would dare venture the opinion that because of the possible pathological change in tissue normal organs should be removed.

It is interesting to note in the first case that an opportunity was presented to examine the portion of the left ovary from which the dermoid cyst had been removed. It appeared healthy, and the subsequent history of the patient confirmed this opinion, in that she continued to menstruate. In fact, so normal was her sexual life that I indorsed matrimony, which took place a year or more after.

DR. BALDWIN.—The question is one that must be decided in

each individual case by each individual operator. That we have attempted to save tissues that are absolutely worthless is unquestioned, though some cases are perfectly well after conservative operations. There can be no doubt that Dr. Broun's contention that we should not go over with the patient the features of the case is well founded; yet often people will say that they would rather go through a second operation than to lose both ovaries. If the patient says that, and is willing to put herself in my hands, it is only fair to try and save a portion of the ovary if there is any possibility of doing so. I would not undertake an operation if I was prohibited from doing what I thought was necessary. It is my duty to give the patient the benefit of the doubt. As to the immediate recurrence of cysts, I had a case somewhat similar to Dr. Broun's. About two years ago, at the earnest solicitation of the woman, I left a portion of the ovary and before she had left the hospital it was the size of a goose egg. I asked her to come back. She returned in about three months, and the cyst was the size of a hen's egg. Then it gradually disappeared. I have seen her within three months, and she is well, menstruates regularly, and is happy.

There are two cases which I reported in the series to which Dr. Hyde referred—one the wife of a doctor where he absolutely insisted that some part of the ovary be left. I left a small fringe and that woman is well. In the other case, the woman with a double ovarian abscess where I advised a laparotomy to which she did not consent, I opened through the cul-de-sac and each ovary was incised separately and that woman is now perfectly well. One great point is in regard to the material to be used in stitching up the ovary. I believe that the finest catgut that we can procure of sufficient tensile strength is the best. In two cases of recurrence I found the remains of silk ligatures in the ovary.

DR. RAWLS.—A stenographer, about twenty years of age, had severe ovarian pain, intensified during menstruation. At operation a cystic ovary was found. This was resected and many small cysts in the remaining ovarian tissue were punctured. Her recovery was uneventful until the eighteenth or twentieth day, when she complained of severe pains in this side. This increased and on examination a cystic mass was found. Another laparotomy was done and a cyst about the size of a grape-fruit was removed. I mention this case because there had elapsed only twenty-five or thirty days since the first operation.

DR. GRAD.—A great deal of good can be done by conservatism, although I must admit that some cases may need further operative procedures. If the patient presents herself to me and I find that she is suffering positively as a result of the cystic degeneration of the ovary, that is, that her symptoms are due to the ovaries alone, I am not inclined to do conservative surgery on that

particular patient. But if I find that her symptoms are such that I cannot positively say that the ovaries are causing the symptoms, I do conservative surgery. I have been surprised to hear that so few pregnancies are reported after conservative ovarian surgery.

DR. TAYLOR.—I took the trouble to look up the histories of the late Dr. Pryor and some of my own to the extent of about sixty and I found the per cent. of pregnancies about as Dr. Hyde has stated. Four cases became pregnant afterward, and four required a second operation. From what I have seen I am a firm believer in conservative work, granting the fact that you have a young woman who has cystic degeneration of the ovaries. If we only have ten or twenty per cent. of recurrences, it is not worth while to do it. We can easily take out, but we can never put back. I have seen two cases where conservative work was attempted on the ovary by applying carbolic acid. Inflammatory reaction followed, requiring secondary operation.

DR. PINKHAM.—Perhaps my ideas in regard to conservative surgery are at variance with the majority. There is one important thing in regard to these cysts and that is the cause of the pain. I do not believe that in one per cent. of the cases where we operate for cystic ovaries that the symptoms are due to the cystic degeneration of the ovaries. I think that a great deal of trouble in cysts is due to the prolapsus of the ovary and the consequent dragging on its ligaments.

DR. HYDE.—The subject is certainly in a state of chaos, as the discussion of to-night has shown. My point is this: For badly cystic ovaries that give symptoms, I still believe that ablation is preferable. But there is never going to be a consensus of opinion on this subject. Every man is going to do just as he sees fit at the operating table.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of February 15, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. GEO. H. NOBLE of Atlanta, Ga., read a paper,

THE TREATMENT OF PUERPERAL INFECTION.*

DR. A. F. A. KING.—Puerperal infection has interested the medical world for centuries. He does not quite understand how antepartum infection can occur. There should be two systems of treatment—surgical and obstetrical. The larger portion of obstetricians are not surgeons and these will continue to resort to general measures. When surgical treatment is necessary expert surgeons should be called in. He is glad Dr. Noble has found a method of diagnosing thrombosed pelvic veins. He does not see why one should work blindly with the fingers or curette in intrauterine conditions, and would suggest the use of a speculum so as to see directly the condition within the uterus.

DR. H. D. FRY.—Although puerperal infection seldom occurs in properly conducted hospitals, one must expect to see a certain number of such cases. It is important to distinguish salpingitis and other local processes from general sepsis. As regards the treatment of general sepsis it is unsatisfactory. Crede's ointment, antistreptococcic serum, and most other methods of treatment have not given good results. Alcohol is one of the most valuable agents in the supporting treatment. Diphtheritic serum has proven of more value than the streptococcic serum. When an infection with the Klebs-Loeffler bacillus occurs it is a specific. Surgical treatment consists in opening and draining exudates and abscesses. Hysterectomy is seldom indicated.

DR. MORAN.—The paper deals particularly with the fact that we should diagnose the nature of the process. In saprophytic conditions employ local treatment; in pus formation, evacuation. The exact diagnosis, hence, is necessary. In saprophytic conditions there is usually a foul odor, whereas in pure streptococcic infections there is no odor as a rule and local treatment is of no avail, because the bacteria soon pass beyond the surface. His

*See original article, page 189.

experience has been more from the medical standpoint. In operative cases the mortality is almost 100 per cent. in the acute stage. After several weeks, when the infection has almost spent itself, operation offers a better hope of cure. In streptococcic and gonorrheal infections local treatment does no good. The results of treatment of systemic infections by the serum depends upon the correspondence between the varieties of the microorganism infecting the patient and that from which the serum is prepared.

DR. BOVEE.—Dr. Noble always brings something of interest. It is important in streptococcic infections to know the variety of the organism. In gonorrheal infections local treatment does good. Tincture of iodine is the best, but it may cause a spread of the infection. In streptococcic infections surgical treatment is of no avail. The evacuation of abscesses should be done, but as the abscesses at times occur in the uterus hysterectomy may become necessary.

DR. J. T. JOHNSON would voice the sentiment of the society in thanking Dr. Noble for coming so far to read his paper. The only point which he would make is that the disease is a preventable one. Autoinfection hardly ever occurs. The management of a case in a good maternity hospital is so much better than at home that we should advise our cases when possible to be delivered in hospitals. The percentage of deaths in hospital practice is .6 per cent. The most important thing in the treatment is to impress the general obstetrician to use strict aseptic measures in the delivery of women.

DR. NOBLE.—Dr. King said antepartum infections should not occur. This may be true, but they are nevertheless met with and are very serious. The sooner the uterus is removed the better in these cases. He is interested also in the doctor's speculum, but would not use it. The presence of odor does not mean sapremia, as you may have marked sapremia without odor. There is a time when one can do good by invading the cavity of the uterus, and a time when it is too late. The important thing is to make a diagnosis.

Meeting of March 1, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. J. D. MORGAN read the essay of the evening,

MENSTRUAL ARTHRITIS.*

DR. H. D. FRY was glad to hear the paper, as it will direct his thoughts into new channels. The question comes up as to whether the arthritis is a coincidence or cause and effect. Rheu-

*See original article, page 207.

matism will produce dysmenorrhea, but he does not know that dysmenorrhea can be the cause of rheumatism. During menstruation it has been found that there is less functional activity of the kidneys, diminished urea and this may stand in some causal relation to rheumatism. He disagrees entirely in one particular with the views expressed in the paper that septic conditions may arise in the uterus during menstruation and also the advisability of giving antiseptic douches. It is an acknowledged fact that the vagina and uterus are free from pathogenic organisms. Streptococci and staphylococci where introduced into the vagina are destroyed by Döderlein's bacillus, so that antiseptic douches by faulty technique may carry in pathogenic bacteria and thus do more harm than good.

DR. CARR.—Arthritis is a wide subject. There are many causes and variations, rheumatic, gonorrheal, tuberculous, staphylococcic, streptococcic and mechanical. There are two distinct varieties of rheumatic arthritis, first, acute articular rheumatism, infectious in nature, and second, chronic rheumatism, in which uric acid, hippuric acid, xanthin, etc., may be cause of trouble. Because there is arthritis it does not necessarily follow that bacteria are present. The temperature may reach 105° , caused by an absorption without infection by bacteria. The destruction of body tissue, as may be the case in menstruation, may by absorption cause an arthritis.

The point made by Dr. Fry as to the lessened renal function is a good one. As to the invasion of the uterus by bacteria he does not believe that the bactericidal action of the vagina and uterus always prevent bacterial invasion, witness the gonococcus. Congenital antelexion may cause invasion of germs. Antiseptic douches do no harm.

DR. STONE said that he had never seen a case such as described by Dr. Morgan, but that does not mean that they do not occur. He recalls the fact that when Sānger reported his case of deciduoma malignum great incredulity existed as to its real existence. Now nearly every gynecologist of wide experience has encountered such cases. He is glad Dr. Morgan has brought up the subject, but he cannot see what the explanation will be. All agree that woman's organism is far more sensitive at the menstrual period. Neuralgias are worse at that time. The studies of toxins are now on the road to make them understood. A number of symptoms, such as those described by the essayist, are caused by digestive disturbances. He saw once a case of skin disease which occurred with menstruation.

DR. J. T. JOHNSON said that he had never seen a case which would come under the head of menstrual arthritis. Patients who have rheumatism suffer from both amenorrhea and dysmenorrhea. Dr. Morgan's father gave a prescription for dysmenorrhea

which, in a case seen with Dr. Magruder, gave more relief than curettage and other gynecological treatment. It was based upon rheumatism.

The prescription is as follows

R Corrosive sublimate.....	gr. ii
Guiaac	5 i
Canada balsam	5 i
Oil Sassafras	gtts xv
Alcohol	5 i

Dissolve the guiac and balsam in the alcohol, filter and add the oil of sassafras and corrosive sublimate and dissolve.

Sig. Twelve to fifteen drops in water three times a day, as directed.

The neuralgic is one form of dysmenorrhea and is perhaps caused by uric acid. We constantly see legache, backache, and joint pain before the establishment of the flow which disappear with the appearances of the menses. He does not believe much in Dr. Fry's theory about the kidney function. He does not think antiseptic douches would do any good, as they could not gain entrance into the uterus.

DR. BALLOCH.—One need not regard the condition as anything unusual. Any toxemia is liable to affect joints and any disturbance of metabolism is liable to cause toxemia. Nothing is more likely than disturbed menstruation to cause toxemia.

DR. FRY thought that perhaps the internal ovarian secretion had something to do with the condition. The toxemia of pregnancy may possibly be due to this cause. The removal of both ovaries causes an atrophy of the uterus and vagina, which shows it has a marked influence upon the organism. In reply to Dr. Carr he would say that the pyogenic bacteria, except the gonococcus, are destroyed by Döderlein's bacillus and cannot get to the uterus.

DR. ADAMS said that every woman is a rule unto herself and he is prepared for anything in any young woman. The manifestations described by Dr. Morgan, swelling and tenderness of the joints, with fever, all occur in angioneurotic edema, so that it may be the same as that disease. He rather favors Dr. Balloch's theory. He has never seen arrest of menstruation in any young girl.

DR. J. T. JOHNSON.—Arrested menstruation frequently occurs. A case is recorded where a cold bath caused permanent invalidism.

DR. CARR also has seen several cases of this kind.

DR. MORGAN said that the uric acid diathesis is given as the cause of many diseases, but very little is really known concerning it. Gout they say is less common in women because of menstruation. The streptococcic invasion theory is not his, but Riebold's. Dr. Noble in a paper recently read here thought that in pregnancy these bacteria do at times invade the uterus. Erythema and urticaria occur with both menstruation and pregnancy. The disease is not a new one. Dr. Hewitt refers to it

as menstrual arthritis. Dr. Balloch comes nearer to the right explanation than the others. He thinks it a disturbed metabolism with absorption. Dr. Adams' idea that it is perhaps identical with angioneurotic edema is not tenable because of the fever and redness. Cushing and Cumston give an angina of menstruation, a form of tonsillitis, and tonsillitis is generally regarded as rheumatism.

TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION.

Meeting at Atlantic City, N. J., June 4, 1907.

SECTION ON OBSTETRICS AND DISEASES OF WOMEN.

DR. J. WESLEY BOVÉE, *Chairman, Presiding.*

Chairman's Address.—

THE STATUS OF THE FIGHT AGAINST CANCER OF THE UTERUS.

Dr. Bovée said that if one formed an opinion from a study of the many articles catalogued upon the subject he would think this a hackneyed subject and that great enthusiasm existed in the professional ranks concerning the treatment of cancer. Every form of remedy was presented, ranging from radical surgery to the use of *x*-ray and radium. The great things that had been claimed for some of the new remedies were exceedingly interesting, but varied from the facts. Those who were brought into actual contact with cancer of the uterus knew that it was one of the worst scourges that woman was heir to. It seemed that in no country, race, or society was woman free from this disease.

The treatment of cancer was of vital importance, and that the best results be secured it was necessary that an early diagnosis be made. The fact that the uterus was a concealed organ, and that women often hesitated to be examined; also that it was a disease that occurred near the menopause, and that many of the symptoms for which the patient consulted a physician were attributed to this change, made many cases escape diagnosis until far advanced. Great responsibility rested upon the family physician, for he was the one usually first consulted, and unless he made an early diagnosis, or called in the specialist, an early radical operation would be unavailing. With the numerous handicaps put upon him, the surgeon had not been able to demonstrate to the general practitioner the curability of cancer by radical operation, and industrious effort would be necessary for years to overcome this obstacle. He would insist upon women who were approaching the cancerous age being examined at regular periods, the

same as they would consult a dentist about their teeth. All cervical tears should be repaired and prophylactic measures be employed.

He thought radical operation was the correct treatment in cases where early diagnosis was possible. In the later stages of the disease Byrnes' method of the galvanocautery had proved beneficial, and the trypsin and acetone treatment was now much used in nonoperable cases. The use of the *x*-ray had not proved beneficial on account of the uterus being deep seated. The radical operation by the abdominal route offered the best results. All rooms occupied by cancerous patients should be fumigated.

HOW CAN WE LESSEN THE MORTALITY OF UTERINE CANCER?

DR. E. E. MONTGOMERY said that it had been thus far impossible to determine the etiology of cancer. Many were inclined to think that it was of bacterial origin, but this had not been proved. Clinical evidence was sufficient to justify the conclusion that heredity was an important factor, as was also acquired vulnerability or loss of resisting power on the part of the patient. In many cases cancer had followed change in cell structure or as the result of injury. Most of the cases were found in women who had borne children, and one of the greatest etiological factors was injury or long irritation of the part affected.

Everyone recognized the fact that a damaged, lacerated cervix was a factor to be heeded, and all such injury should be treated and cured. The longer these conditions or injuries existed the more likelihood there was of the surface granulating, thickening the walls, and thus causing pressure on the terminal nerves. Perineal irritation might also lead to some disturbance of the uterus and the adnexa, and thus lead to malignant growths.

It was self-evident, then, that the physician must be on the watch for these irritating conditions and treat them, thus taking the first and most important step in these cases *i.e.* *preventive treatment*.

Treatment naturally resolved itself into three divisions: preventive, curative, and palliative, the first two being the most vital. An early diagnosis was all-important, and in order to prevent the development of cancer the physician had to consider all of the functions of the body. He should see that his patient was eliminating injurious toxins and that the emunctories of the body were kept in good condition by proper exercise, and, if necessary, sleeping in the open. The success of treatment depended upon an early diagnosis, and it was important to take cognizance of hemorrhages or foul discharges, especially near the change of life. Of course these conditions might exist without malignancy, and the presence or absence of one of these conditions was not an evidence of the presence or absence of a cancerous growth, but they were signs to attract attention. In some cases it might be necessary

to dilate the uterus, but involvement of the cervix was readily recognized.

Experience demonstrated the fact that the earlier in life a cancer developed the more rapid was the progress of the disease, and at all times an accurate knowledge of the condition was essential for radical treatment and cure. If the disease was recognized at its beginning there were good grounds for belief in a cure by radical treatment, and then not only the tumor should be removed but the surrounding tissue that might bear suspicion of infection. The longer the condition existed the greater the involvement of lymphatic glands and surrounding tissue and the greater the danger of metastasis.

As to the route to be used for an operation, he thought that, as a rule, the abdominal should be chosen, but in very fat patients and those who could not stand an extensive operation it was better to use the vaginal route.

DR. HOWARD KELLY said he wished to put emphasis upon the necessity of an early diagnosis, for in the later stages very little could be accomplished toward a radical cure. He favored a careful study of cases and a systematic classification, but there were many variations in individual cases. It was his opinion that much harm was often done to the patient by a too long operation; thus an operation requiring two or three hours was too much of a drain upon the patient's strength. He made it a rule to use long clamps in shutting off blood-vessels, thus saving much time.

DR. MASSEY of Philadelphia said that he was using a modification of the method of cauterization by the zinc-mercurial method which he presented at New Orleans, and had been successful in two cases. Instead of using a general anesthetic, he now applied the cautery as long as the patient could endure it without too much pain, and he had been able to use a current of 200 milliamperes from one-half to one hour without any great discomfort to the patient. This treatment was administered at varying intervals, and one of the patients had been well for over three years and the other for nine months.

DR. MARGARET CLEAVES said that she had been using trypsin in the treatment of these cases and had been so far successful that she had now patients who were living without any symptoms of cancer who according to all rules of the disease should have died several years ago.

DR. H. J. BOLDT said one of the features that marked the prognosis of cancer was age, and that patients who developed the disease when near the age of thirty years were doomed. It was important what route should be taken in the operation, and in cases over fifty years of age he advised the vaginal route, as there was less shock to the patient, and his experience had not been satisfactory in these cases when operated by the abdominal route. It was his opinion that in these cases radical surgery was the right method, and he was surprised that Dr. Massey advocated any other.

DR. D. L. CRAIG thought that by making the general practitioner understand the important part that injuries and local irritations played in the production of cancer much could be done toward its prevention.

In closing the discussion, DR. MONTGOMERY said that he was glad to hear of every method that offered a hope in treating this disease. The time might come when other methods would prove that they had greater merit than the radical operation, but at the present time, and with the light we now had, he held to the radical operation as the best in all operative cases.

PARASITIC UTERINE MYOMATA.

DR. THOMAS S. CULLEN said that by the term *parasitic uterine myomata* he meant that form of myoma that had become partially or completely weaned away from the uterus and derived its blood supply from some other source. These tumors often got the greater part of their blood supply from the omentum, the large or small bowel, the bladder, mesenteric vessels, Fallopian tubes, or from several sources at the same time. In many of these cases the omental adhesions were associated with adhesions in the pelvis or with pus tubes. In many cases the pedicle became exceedingly small, and mostly all of the blood supply came from some other source. When this blood supply was from the omental vessels they became very large and tortuous, and, as a rule, there were large arteries, each accompanied by two veins. In the beginning there might be but little change in the omentum when the blood supply was from that source, but as the tumor increased the omental fat gradually disappeared. The omentum often presented wonderful functional power, as in one case where the tumor weighed eighty-nine pounds, its chief supply of blood coming from the omentum. In the treatment of these tumors, the first thing to be considered was the control of the omental vessels, and this could be done by tying off the vessels on the proximal and the distal sides of the tumor. On account of the delicacy of these vessels it was important that they should be tied instead of using forceps. He would call attention especially to the necessity of tying these arteries when in sight and not attempting to liberate adhesions far under the abdominal wall, for they might contain blood vessels that would give trouble. In some of the cases these tumors were accompanied by ascitic fluid, but generally its presence could be traced to other conditions. Sometimes the lymphatics in the broad ligaments were found greatly enlarged. In some cases where the omentum did not furnish a blood supply the tumor often showed hyaline degeneration and necrosis or it might develop an abscess in the interior and open into the intestine or call on the intestine or bladder for sustenance.

Dr. Cullen showed interesting illustrations of myomata and called special attention to the exercise of great care in the operation lest a blood-vessel be ruptured.

DR. I. S. STONE said that his experience was that large vessels supplied the great amount of nutrition to these tumors. He had written on this subject ten years ago, but it had been passed by with many other things. However, he had taken great interest in the subject, and the writer had presented it in an admirable manner. He had concluded that when a fibroid started on its way it might take an exceedingly varying course.

DR. H. J. BOLDT said that the important point was the blood-vessels and great care was necessary not to injure them and the tumor should not be removed until they were all secured.

DR. C. C. FREDERICKS said that he could say but little for want of experience. He had seen three or four large fibroids supported by the omental blood supply. He thought it was necessary in operating to make a large incision so as to secure the blood-vessels and show where the adhesions were located. He had seen one fibroid weighing thirty-five pounds with adhesions to the omentum and using it as the source of its blood supply. A practical point was to expose the upper part of the tumor so that its blood supply could be shut off without delay.

DR. SETH C. GORDON said that he had only two cases. In these the pedicle was very small with no circulation except through the adhesions to the omentum. The most important point was to stop the blood supply, and in order to do this to take all the space necessary to get at the tumor. He had seen a case in which there was complete separation from the uterus with a tendency to calcification.

DR. BOVÉE had removed one weighing forty pounds and another twenty-eight pounds successfully. He had lost a patient with one of a small size by not controlling the blood supply. The woman died in twenty-four hours.

DR. CULLEN, in conclusion, said that he was glad to know that Dr. Stone had written upon this subject. He agreed with Dr. Boldt on the question of the importance of controlling the blood supply. They had succeeded in removing an eighty-nine pound tumor from a woman who weighed only eighty-five pounds, without any fatal result. When there was cystic fluid present the question might be asked whether there was a possible malignancy, yet upon removing the tumor the fluid usually disappeared and was probably due to some pressure or twisting of the blood-vessels. Cystic fluid was present in less than one per cent. of the cases.

PREVENTION OF PERITONEAL PELVIC ADHESIONS BY ADRENAL SALT SOLUTION.

DR. EMERY MARVEL said that adhesions of the peritoneum were the result of a pathological process active within or adjacent to the peritoneum. The formation of these adhesions was nature's effort to combat an injurious process, in which case the adhesions were beneficial and a protection to the organs. Pro-

phylaxis was the remedy, but when adhesions had formed it was necessary to separate the adherent parts and prevent subsequent reunion. The peritoneum was a serous membrane with its surface covered with a thin layer of endothelial cells loosely approximated and just beneath these blood-vessels and lymph. Osmosis was free between these channels and exosmosis was increased by the blood pressure distending the walls and increasing the caliber of the interstices. Any active irritant on the peritoneal surface caused filling of the blood-vessels, exudation, cohesion and fastening together of the surfaces—fibrous tissue. In order to avoid adhesion it was necessary to remove the irritant, separate the adherent surfaces and provide a preventive for their reuniting.

In order to accomplish this he used a solution of adrenalin chloride in normal salt solution. This prohibited further exudation from the relaxed vessels and closed the lumen of the same. The action of adrenalin was prompt, but of short duration. However, it did not yield its influence until removed. This solution kept the surfaces apart and gravity could be used in selecting the desired location.

In applying the solution of adrenalin and sodium chloride he separated the surfaces, removed the pus and placed the solution in contact with the oozing surface by using a glass irrigating nozzle leading from a reservoir. While the solution was slowly flowing in, the incision was closed, leaving only a space for the tube, which he removed when there was enough of the solution in. The temperature of the solution was from 100° to 110° F., the quantity varying from 500 to 1,500 c.c.

DR. F. S. SIMPSON said few subjects were of greater importance than that of adhesions, and no method that offered assistance should be overlooked. He thought the greatest importance was in delaying operation until the pus became sterile. In this case inflammatory reaction was not so likely to occur. Prophylaxis was the most important point and it should be the effort of the surgeon to cover all denuded surfaces with healthy peritoneum.

DR. FLORUS LAWRENCE said that many of the adhesions were due to the method of operating upon the abdomen. If the patient was pulled and hauled with retractors, turned upside down, the intestines drawn out and handled carelessly, we should not be surprised at getting adhesions. If the operation was clean, with no traumatism, no raw surfaces left, no washing, no tubes left sticking in the wound, and all such things, there would be but few adhesions. He did not believe that he would be justified in placing the adrenalin solution in the abdominal cavity of one of his patients, most assuredly he would not want it in his own. It was his opinion that serum was protective.

DR. DANIEL L. CRAIG said this subject had interested him a long time. As to adhesions, he believed that many of them were conservative and that they prevented the dose of poison overwhelming the patient. It seemed that in many cases the walling

off was not necessary and the patient would be better without the adhesions. Instead of using so many chemicals for disinfecting he had come to use nothing but alcohol on his hands, thus trying to protect the organs handled. It was known that adrenalin in other parts of the body had its reaction, and hemorrhage sometimes occurred where it was previously suppressed, and it occurred to him that using this solution was simply postponing things.

DR. C. C. FREDERICKS said he had used the normal salt solution for flushing abdominal cases, but he had not used it for four or five years. He believed it wrong in principle and practice and did not believe that it prevented adhesions. When he had used the salt solution he found that he got adhesions in many cases and now he used the dry method. In breaking up adhesions there might be capillary oozings and he had used adrenalin solution in a number of such cases. He simply took a little pledget of cotton with the solution on it and pressed it down upon the surface and easily controlled the oozing. He used a solution of 1-1000, found it practical, and the oozing did not recur.

DR. DAVID TOD GILLIAM said that adrenalin had not proved quite as satisfactory as he had hoped it would, for he had used it in cases where blood-vessels of some size were affected and it produced but little effect. Researches showed that there was very little absorption by the surface of the peritoneum this side of the diaphragm. He believed in the theory that adhesions were conservative and protective. While he had found adrenalin was not as great a hemostatic as he thought, it would act on the capillaries. but vessels of larger size with open mouths it would not close.

POST-OPERATIVE INTESTINAL OBSTRUCTION.

DR. C. C. FREDERICK made the statement that post-operative ileus was one of the serious sequelæ of abdominal operations, and every surgeon with extensive experience had been called upon to treat it. Intestinal obstruction following abdominal operations of all kinds was quite frequent. For the sake of convenience, he divided the post-operative obstructions into two classes, the early and the late; the first included those cases which had not yet been discharged from the hospital, that is, within two or three weeks after the operation. Those that occurred after this time he classed as late. It was his purpose to discuss only the early cases. In the early cases it was frequently very difficult to make a diagnosis. Failure of the patient's bowels to pass either gas or feces between the end of the second and the fourth day after operation might not of itself be significant, but if, accompanying their failure to act, there were vomiting, distention of the abdomen, rising pulse and possibly fever, the scene was changed. He had seen eleven days elapse after abdominal section before there was a fecal evacuation and six days before any gas passed, and yet at

no time was there any idea of obstruction or peritonitis. During this time no cathartic or enema was given. Failure of the patient's bowels to move or to pass gas after two to four days, when all ordinary means had been used to secure renewal of the normal fecal current, led at once to the necessity of deciding as to the possible cause of this failure. When a patient who had passed the active period of nausea following anesthesia, or who had had no nausea, began to vomit on the second or third day, small quantities of clear, thin, bile-stained fluid, becoming more copious and frequent, changing to dark and flaky, or possibly brownish, the conclusion might almost certainly be reached that some form of obstruction had supervened. Often the vomiting was not expulsive, but a sort of regurgitation or overflow from a stomach filled with fluid, although the patient might complain of nausea. Vomiting was a symptom in both classes of cases, and so also was distention, except in those rapidly progressive virulent types of septic peritonitis where there were very little vomiting and slight distention, while the patient's pulse rose high with decreasing tension and without the corresponding rise in temperature or with a drop to subnormal. The less virulent cases of septic peritonitis might have a corresponding increase in pulse and temperature at first, as they did in mechanical obstruction. When the septic process had gone further the temperature would not keep pace with the pulse or would fall to subnormal. Fecal vomiting might occur in septic peritonitis as well as with mechanical obstruction. There might be a symmetrical distention of the abdomen in mechanical cases, which, if recognized, was a valuable aid to diagnosis. Septic peritonitis was more liable to be the cause of obstruction in the early stages, within the first three or four days, than was mechanical obstruction, although the latter did occur; in fact, a patient might be the subject of both forms at the same time. Dr. J. F. Murphy found by experiment that the obstruction of the venous flow of the gut produced more prompt and serious symptoms than obstruction to its arterial supply. Mall had shown that ligation of the superior mesenteric vein would at once throw the entire intestinal tract into violent peristalsis, and that ligation of the mesenteric vein would throw that portion of the gut which it drained into active contraction. It was probable that these facts to a degree accounted for the paroxysmal and painful contraction of mechanical ileus, which, at the point of obstruction, interfered with the venous return from the bowel.

Dr. Frederick said that many cases had been reported by different observers in which tonic spasm of the bowel had caused occlusion, and on operating, or at autopsy, no other cause was found. The surgeon often had to shoulder the responsibility of an exploratory incision. Every operation should be performed with the main idea of relieving the patient and freeing her of her ailment, but it should be done in a manner to protect her against

every possible post-operative sequela. In a majority of cases adhesions of some kind existed prior to the operation, or had been produced by the pathological process present, or as a result of the operation. It was the duty of the surgeon to prevent these conditions as far as possible. During the operation the intestines should be handled as little as possible, their isolation being facilitated by the use of flat sponges or towels wrung out of warm, sterile, normal salt solution. Unnecessary tearing of the peritoneum and the spreading of pus should be avoided, as well as aspiration if possible. Care should be exercised to cover the denuded points, especially the stump of broad ligaments, tumors, etc. He believed that in all pelvic operations on women drainage could best be done through the vagina, and the cigarette drain filled all demands for drainage. If possible the use of drains should be avoided. When old adhesions existed between the bowels it was questionable whether it were better to break them up, and thus make opportunity for new and probably worse adhesions, or to let them alone. Consensus of opinion among surgeons was to the effect that too early or too strenuous efforts to move the bowels should not be made, for the whole nervous mechanism had received a shock at the operation. Rest was an essential element, and only the lower bowel should be stimulated to pass gas for the relief and comfort of the patient. Some surgeons forbade the use of morphine on account of its effect upon the secretions, but it was his opinion that the nervous exhaustion of the patient was more injurious than the action of the drug. He gave his patients an anodyne. Codeine phosphate hypodermatically, given in doses of one to one and a half grains, quieted the pain and caused no nausea. It was better to refrain from giving cathartics, and then the patient's organs began to perform their functions normally. If cathartics did not give good results it might be safely concluded that they were harmful. The enema was less harmful, but changing the position of the patient from time to time was also advisable. In all cases of obstruction early operation was the watchword, the largest mortality being in the immediate cases, within three or four days after the original operation.

Dr. Frederick called attention to the fact that a patient might be killed by a lethal dose of toxins absorbed from the alimentary tract after the obstruction had been removed and the pent up secretion passed into the bowel below, where rapid absorption took place. It was therefore advisable in some cases to bring a knuckle of the gut into the wound, incise it, clean it out, and use lavage in both afferent and efferent loops, and thus remove the accumulated toxins. How much was to be done depended in each case upon the judgment of the operator. There was little doubt that the future would prove that the proper operation when the patient was *in extremis* was enterostomy at the most prominent point of distention or at one side of the original incision.

PREVENTION AND TREATMENT OF POST-OPERATIVE INTESTINAL OBSTRUCTION.

DR. DANIEL H. CRAIG referred to previous articles which he had written on this subject. He reviewed the action of eserine salicylate upon the intestines and described the anatomy of the intestinal walls and nerve plexuses that were involved in the action of the drug. He was more convinced than ever that the use of this drug was beneficial in preventing post-operative paralysis. This paralysis, he thought, was probably due to inhibition caused by stimulation of the splanchnic fibers, and exhaustion caused by overstimulation, and hence fatigue of the ganglia in Auerbach's and Meissner's plexuses. In order to regulate peristalsis it became necessary to stimulate the spinal reflexes by acting through the splanchnic fibers, and thus restoring energy to the intestinal nerve endings and muscles. Eserine salicylate was found suitable to meet this condition, and a continued use of it, with careful observation of its action, had sustained the assumption that its use in intestinal obstruction was very valuable. The cases that were under consideration were classed as recent ones, and the factors that were to be considered as causing post-operative obstruction were paresis, volvulus, thrombosis of the intestinal vessels, adhesions in connection with kinks and slight local infection. The diagnosis of post-operative intestinal obstruction within the first few days after operation resolved itself, therefore, into a differentiation between mechanical obstruction, paresis, septic peritonitis, and shock. It was very important to make a correct diagnosis in these cases, but more important, if possible, to use every prophylactic measure to prevent the condition. For six years it had been his custom to administer to the patient, before the anesthetic, a hypodermic injection of atropine sulphate, and when the patient was placed upon the operating table, and it was determined that it was not contraindicated, in two to five minutes after the abdominal cavity was opened, he gave an injection of eserine salicylate in fresh solution. The continuous use of this method had made him more enthusiastic than ever in its employment, and he now made it a practice to use it as a prophylactic measure. Two arguments have been presented against its use: one, that fatal intestinal paresis was so uncommon that its use as a prophylaxis in every case was uncalled for, and while this might in a measure be proved, the fact remained that such cases did arise, and that the means used to prevent this condition also added to the comfort and general welfare of the patient. The other objection to this method was that to prevent adhesions was to interfere with nature's process of protecting herself by their formation. However, it could well be argued that these adhesions were not protective, but were pathological in character. The eserine prevented enterospasm or overcame it, when it did exist, by setting up peristaltic waves. Furthermore, it prevented

meteorism, and by this means the comfort of the patient was greatly conserved. Even in cases where eserine had not been used as a prophylactic it was often used to overcome post-operative intestinal obstruction by producing peristalsis, and thus straightening out the kinks in the intestines and overcoming the obstruction. It had been his custom to use $1/40$ of a grain on the operating table, and too large or too frequent doses might produce meteorism with abdominal distention. In all cases where prophylactic doses had been used it was important that the patient should be left alone, as there was no need for cathartics or enemas.

SUCCESSFUL TREATMENT OF ACUTE POST-OPERATIVE ILEUS; INCISION AND DRAINAGE OF THE INTESTINE, WITH
REPORT OF FOUR CASES.

DR. FRANCIS D. DONOGHUE said that surgical interference in the abdominal cavity was followed, in nearly every case, by some paralysis of peristaltic activity. The majority of these cases yielded to treatment by the ordinary methods, but those that did not do so presented a very dangerous complication and caused the surgeon much anxiety. The inertia of the bowel often resulted in "kinking" and serious complications. Usually the symptoms developed early, and in twenty-four to thirty-six hours might be well marked. When there ensued persistent vomiting that changed from bilious to stercoraceous, accompanied by abdominal distention that was not relieved by an enema, while the vomiting was not controlled by gastric lavage, there was cause for great anxiety. The use of eserine and physiological doses of atropine might prove of great benefit, but when the case had reached a critical stage mechanical treatment was the means offering the greatest chance for recovery. The value of enterostomy in these cases had not yet been fully appreciated, for it offered a means of escape of gas and feces, and at the same time made possible the injection of magnesium sulphate solution, which would evoke peristalsis at a considerable distance from where the tube was placed. By this means also food and stimulating fluids could be introduced into the alimentary tract. It was his custom to incise all loops that were much distended, to empty out the liquid contents and gas, and then close by a continuous suture. With this preliminary preparation drainage could be established and the resulting fistula could be closed or left to nature. It was his opinion that, irrespective of the location of the distended loops, a permanent tube should be left in the cecum for drainage or for further treatment. Dr. Donoghue gave a history of four cases in which post-operative procedure became imperative, and in three of these cases the recovery was satisfactory and complete. In one case, where the conditions were exceedingly unfavorable the patient died.

DR. CHARLES P. NOBLE said that he was pleased to note that Dr. Donoghue was so optimistic, but his experience was such that

he used every means possible to prevent obstruction. He began before the operation by studying the case thoroughly and not operating in acute conditions where it was possible to avoid it. He made this a rule in all of his cases. He thought the patient was often put on the table too quickly, without the surgeon having had an opportunity to study the case. It was his opinion that a few minutes more at an operation might prevent conditions that would afterwards prove serious. Years ago he had lost patients that died from septic peritonitis, and at one time he found a case where the stomach seemed to occupy the whole abdominal cavity. By the use of the stomach tube this condition was relieved, and he had decided that the stomach tube was a great aid to surgery. So far as the treatment of post-operative intestinal obstruction was concerned, it was his opinion that nearly every genuine case died.

DR. EDWARD E. MONTGOMERY thought that an important consideration was the leaving of as little surface as possible for adhesion. In the use of medication he had depended largely on atropine, and he did not allow his patient to remain in one position. When there were symptoms of obstruction he used lavage and the enema, and finally resorted to operation when it was necessary. At the present time he had a patient that was adverse to an operation, but after enema and lavage had failed he opened the abdomen and found in the intestine a twist that caused the obstruction. He favored washing out the intestine and leaving it open for lavage.

DR. TABOR JOHNSON said there were two important points. The first was the preparation of the patient for the original operation. The patient's condition should be a subject of special study by the surgeon, so that he might use every prophylactic measure. He believed that the fate of the patient was virtually settled when she was taken from the operating table. The second point was the care exercised at the time of operation. No little detail should be omitted and every precaution should be taken so that there would be no necessity for a secondary operation.

DR. ISAAC S. STONE thought that it was seldom necessary to reopen the abdomen, and that when the patient was put to bed her fate was virtually settled. He would call attention to the fact that the author of the paper did not mention the use of alum-water enemata. He thought that the condition where the intestine was paralyzed to an extent of about six feet and vomiting took place might be termed reverse peristalsis, and his opinion was that peristalsis was a wave going along the intestine pushing the bolus before it, and not so much the lateral movement of the bowel. He thought the time was past for entering the abdomen through a small incision, and he believed in making one large enough to facilitate doing the work well. He had ceased using salt solutions, etc., but he had received great help from Dr. Craig's suggestions as to the use of eserine.

DR. SETH GORDON said he believed in the old saying, "make haste slowly." He approved of the use of eserine, but thought some were a little hasty in its use in many cases, for even if there were exciting conditions the patient would often recover. In many of his cases he used a high enema of quinine sulphate, and sometimes a low enema, injecting 20 to 30 grains in two ounces of water. If the patient vomited he used the stomach pump. He would let the patient drink all the water she wished.

DR. ALBERT GOLDSPOHN said he believed in using every prophylactic measure, and gave large doses of castor oil before operations, as much as ten ounces, and used large enemata. The patient was permitted a liquid diet to within eight hours of operation and plenty of water all the time. He gave strychnine twelve hours before the operation, and if the heart were weak he used a German preparation of two grains of camphorated oil. It had been demonstrated that exposure of the intestines to the air was injurious. When operating he used wet cloths dipped in bicarbonate solution to protect the intestines, and made it a point to cover all denuded surfaces of the removed organs, but did not fix by the omentum.

DR. H. C. DEEVER said the discussion sounded more like one on wind-colic than one on post-operative intestinal obstruction. He was a believer in quick work, and much of the trouble was due to unnecessary handling. The cases that he saw followed bad septic conditions, as in appendicitis. He never had obstruction in chronic appendicitis, but in his acute cases seven in ten recovered and three died. He did not wait for the classic symptoms, but opened the patient.

DR. CARSON said that the reason why the intestines were handled was that the patient was not completely anesthetized. If the patient were profoundly anesthetized the bowels would drop down out of the way and would not be forced up by a sudden spasm. He believed in leaving the bowels alone for forty-eight hours. Sometimes there would be cases of obstruction in the pelvis, and by manipulation he had succeeded in getting the loop out and relieving the patient. In some cases sepsis was so marked that it gave the symptoms of obstruction, but this was due to the absorption of toxins. Atropine had proved useful to him, and he believed eserine was very beneficial.

DR. C. S. BONFIELD said that he had unbounded faith in eserine, but in some cases it failed. He had never had any bad effects except in one case, where the house physician gave 1/30 of a grain to a woman who weighed about eighty-five pounds. Things looked serious for a time, but she came out of it all right.

DR. S. W. BANDLER said that in most of his cases eserine had proved useful, but that it did not always give the desired results.

DR. FREDERICK said he did not mean to go into the question of antiseptics, distention of the stomach, etc., but he contended that when post-operative obstruction of the bowel did occur it was necessary to act promptly, for if there was delay the patient would die.

DR. CRAIG did not wish to convey the idea that he would use eserine in mechanical obstruction. In the case of a horse the question was which would give the better result, a whip or oats. Eserine was the oats and milk of magnesia the whip. One should never be in a hurry to make the patient's bowels move providing she was doing well.

OVARY AND OVARIAN TUMORS IN THE INGUINAL CANAL; REPORT OF TWO CASES.

DR. J. H. CARSTENS said that he had a case of a girl about sixteen years old who had had a hernia since she was a child, and which began to enlarge at puberty. The appearance of the tumor was like that of a hydrocele of the cord. During menstruation she suffered a great deal, and this pain was increased by the hernia. After operation she made a complete recovery and her suffering ceased. Case 2 was that of a married woman, aged 39 years, mother of four children, the youngest 13 years of age. This woman had suffered from rupture for many years, for which she had to wear a truss. The hernia became strangulated and excruciatingly painful. Strenuous efforts to reduce it were made, with partial success, but the tumor continued to annoy her and to enlarge. When first seen by him she had a large, fluctuating tumor on the right side, which was evidently ovarian. There was no symptom of hernia, and when the ovarian cyst was removed her condition was entirely relieved.

PROLAPSE OF THE OVARY AND ITS TREATMENT.

DR. GEORGE G. WARD, JR., presented the technic and results of fixation of the prolapsed ovary by means of a button through the broad ligament. He said that this operation was very simple and effectual, and that it did not prevent the woman from becoming pregnant. In all the cases it had prevented recurrence of prolapse. Dr. Barrows had reported only two failures in sixty cases, and in one of these he found a gonorrheal inflammation. In the other case the patient had complained of pain previous to the operation, and the latter did not relieve her. The ovary was afterwards removed, but without improving her condition. When the ovaries were cystic the cysts were resected and the ovaries afterward placed in position. There had been no ill effects as a result of the operation, and as the broad ligament was very thin at that point there was no danger of constricting the blood-vessels.

GONORRHEA IN WOMEN.

DR. H. J. BOLDT said that although Bernutz and Goupil had called attention to the seriousness of gonorrheal infection of woman as early as 1857, the real gravity of the affection was not realized by the medical profession until after the appearance of Noeggerath's monograph. The microorganism that caused the disease was discovered by Neisser in 1879, and had been named

by him gonococcus. This microorganism multiplied by subdivision and formed clusters of cocci, never chains. Bumm was the first to succeed in obtaining artificial cultures. He found that they grew only in blood serum, and were most prolific at a temperature from 30° to 34° C. A temperature above 38° C., if continued, destroyed their multiplying power. The cocci were extremely sensitive to dryness, and after several hours of dry exposure they grew sparsely, and if exposed for a couple of days, as on soiled linen, they did not grow at all. However, when surrounded by moisture they retained their virulence for a long time, so that infection might take place and produce a very acute gonorrhea. A very small quantity of secretion containing gonococci placed on a mucous membrane would produce a most virulent form of the disease. It was known that chronic gonorrhea remained infectious indefinitely—ten years, fifteen years, or even longer. So long as the germs could be found by modern effort there was danger of infection. Repeated examination should be made at intervals and under the most searching tests. If the gonococci were surrounded by a medium that was not constantly renewed, or were transferred to occluded pus cavities, the microorganism lost its virulence in the course of time, and eventually died; hence sterile pus was present in cases of gonorrheal pyosalpinx. The usual seat of primary infection was the urethra, but the vaginal and cervical mucosæ might be first infected when the vulval entrance was large and the urethral orifice high. Follicles with small openings, as well as the ducts of the Bartholinian glands, did not become infected until later. In children the occurrence of gonorrheal vaginitis was quite common, the vagina being the usual seat of infection in these cases, while in the adult female the pavement epithelium seemed to act as a barrier to the microorganism. The gonococci penetrated the epithelial layers very rapidly so that within twenty-four hours there was usually evidence of inflammation.

Dr. Boldt said that his experience and study confirmed the conclusions of Wertheim, *i.e.* the uterus, next to the urethra, was the most favored seat of gonococcal infection. Uterine gonorrhea usually began acutely and invariably caused an interstitial endometritis with purulent catarrh. Wertheim had proved the erroneousness of the supposition that the os internum prevented the ascent of the gonococcal infection to the uterine cavity. The increased size of the infected uterus, and the pain caused by the bimanual examination, must be ascribed to metritis. The only statement he had been unable to verify was that the uterus alone might be affected, as he had invariably found the urethra also infected. Similar inflammatory changes might be found in the Fallopian tubes, and the extent of the inflammation might vary in the two tubes, or the inflammatory changes might be so intense throughout the tube wall as to produce an exudation of lymph on the peritoneal surface and adhesion of the tube to the

surrounding structure. When the ovaries were affected it must be regarded as the result of continuity. In the earlier stage of urethral gonorrhea the patients hardly ever complained of anything else than frequent and more or less painful micturition. Later they complained of pain about the vulva and frequently of pains in the bladder of varying character and intensity. The duration of the disease varied from three to six weeks, or even longer, and if the patient abstained from excesses and exercised cleanliness the majority of cases recovered without any special form of treatment. It was not advisable, however, to rely on spontaneous cure. The recognition of acute gonorrheal endometritis should not be difficult, but the chronic form was by no means easy for one unaccustomed to treating gynecological patients and not in the habit of making microscopical examinations of secretions. The reason was that the patient had rarely any symptoms causing sufficient discomfort to induce her to speak to her family physician. In most cases leucorrhea was the most prominent symptom.

Dr. Boldt said there was no unanimity of opinion as to the effect of the gonorrheal affection of the uterus and adnexa on subsequent conception, and further observation was necessary before an undivided opinion would prevail. He had observed a number of cases of short duration in which there was seemingly complete cure, with pregnancy and normal delivery, while in others of long standing, in which complete recovery did not take place, sterility prevailed. An infection which occurred before conception might not cause serious symptoms, but during the puerperium the multiplication of the gonococci might be very rapid and serious symptoms present themselves. An infection might take place during pregnancy and not give rise to serious subjective symptoms and objectively perhaps only to purulent leucorrhea. The diagnosis of this disease was not difficult in acute or subacute stages, but might be tedious in chronic cases. It could be made positively with the aid of the microscope, and one should never express a positive opinion unless the gonococci could be demonstrated by the microscope, for all pathological lesions that might be caused by gonorrhea might be due also to other conditions. The examination should be made at definite intervals, and especially immediately after cessation of menstruation. One should also always take into consideration the history, the existing subjective and objective symptoms, as well as the bacteriological findings.

Dr. Boldt said he wished to put himself on record as saying that it was an impossibility to prevent the spread of the infection by the method of police inspection as practised in some European cities, for unless the subject was bacteriologically examined it was impossible to tell whether she were free from the disease or not. He further believed that it was an impossibility to stamp out the social evil entirely; it had existed for thousands of years, and would continue to exist for thousands of years more. It was possi-

ble, however, to hold the disease in check by such methods as the Society of Sanitary and Moral Prophylaxis of New York had adopted. An exemplary and pure home life was far better.

As to treatment, if the patient could be brought under proper care at once the disease could usually be held in check so that the upper parts of the genital tract would not be infected. As to the proper treatment, opinions were divergent, but most authors agreed in stating that no active treatment should be employed during the acute stage. Cleanliness, restricted diet, and rest were recommended by all. When the acute stage had subsided local treatment was begun, but the use of the douche was generally discarded. The secretions should be removed by dry absorbent cotton, and the most favored remedy for application was 5 per cent. solution of protargol.

Dr. Boldt discussed at length the various treatments advocated by different writers, and said Dr. MacDonald advocated vaginal tampons saturated with a 30 per cent. solution of silver vitellin, renewing it every twelve hours until the gonococci had disappeared. Dr. Small, when he saw the patient within forty-eight hours, used an abortive treatment of 20 per cent. of argyrol, which he allowed to remain in the urethra five minutes, making the application three times a day, and having the patient use a 5 per cent. solution at home. Dr. Byford advocated prolonged irrigation in the early stages, using hot water as a basis.

Dr. Boldt said further that it must be remembered that all remedies so far known, except a strong solution of chloride of zinc, had only a superficial action, and did not affect the deeper layers of epithelial cells. Physiological salt solution or some mild antiseptic in plain water had therapeutic value in washing away the superficial cocci and was not painful. When the acute stage was passed the more heroic treatment should be used. The silver preparations were the most reliable remedies, and he preferred protargol in 10 per cent. solution. He discussed the treatment of disease of the upper genitourinary tract and explained his method of procedure in the various conditions that arose from an endometritis and extensive inflammation involving the tubes and ovaries.

UNRECOGNIZED GONORRHEA IN THE FEMALE.

DR. S. W. BANDLER said that as readily as we diagnosed gonorrhea in the male, just so poorly did we recognize it in the female. The urethritis in the male, accompanied by pain, attracted attention at once, but, on the other hand, an originally acute localized involvement in the female often attracted little attention, and a subacute invasion might attract none at all. An acute urethritis in the female had a tendency to heal without treatment in six to eight weeks, and in other cases the discharge became less and the symptoms gradually improved. Many patients came to the physician suffering from chronic urethritis

without any evidence of genital lesions, though in many cases there was also a cervical catarrh. The absence of gonococci in the secretions and the presence of pyogenic cocci and bacterium coli was no reason for excluding an original gonorrheal etiology. Unusual location of gonorrhea might prevent its recognition. Involvement of the anus and rectum was not uncommon in children, and certainly not in adults. Baer found that in one hundred and ninety-one cases there was a rectal involvement in 30 per cent. Because the symptoms resembled other conditions a gonorrheal etiology was often overlooked. The infection in children might extend into the uterus, through the tubes, and involve the peritoneum so rapidly that the vulvovaginitis had scarcely time to attract attention. Many of these cases might bear all the evidence of peritonitis, or in the absence of a recognized cause it might be diagnosed as appendicitis, and frequently an operation was performed for this indication. Every attack of peritonitis in female children which simulated appendicitis should have the gonorrheal possibility excluded. The same point held good in adults. In gonorrheal peritonitis the appendix was as a rule reddened, inflamed, and edematous, and if a small incision were made the real condition might be overlooked. A frequent cause of failure to recognize gonorrhea was the mild nature of the infection. This might be especially true after confinement, when after five days one did not expect post-partum infection. The temperature might rise at the end of the first week or in the second week, and an examination might show no involvement of the peritoneum and no pain. However, frequent examination might expose the presence of gonococci. Such involvement often resulted in the so-called "one child sterility" and in changes in the tubes. The disease was often unrecognized because the original characteristics had worn off. This might be seen in cysts, and the finding of purulent secretions and the absence of gonococci under the microscope did not exclude gonorrhea. In women the diagnosis was exceedingly difficult, for the physician was limited to the frequent microscopic examinations, and there were other bacteria that entered into the condition. Then, too, the cervical mucus often made the discovery of the gonococcus almost impossible. In many cases the microscope had done much to hinder diagnosis of old or subacute cases in the adult. Because a casual examination revealed no gonococci the conclusion was often reached that the case was not one of gonorrhea.

Dr. Bandler thought the medical profession was in a position to clinically diagnose gonorrhea when few pus cells and no gonococci were found. One of these symptoms was erosions of the cervix. This condition was generally noted in nulliparæ suffering from cervical or uterine catarrh. This was due to the destruction of the squamous epithelium about the external os and its replacement by the cylindrical epithelium which normally lined the cervix. In this condition in nulliparous women who had not been

curetted, gonorrheal infection must be considered. In these cases there was a cervical catarrh, the cervix was dilated and filled with a thick plug of mucus, which was white or yellow, and contained squamous epithelia and leukocytes, but often no bacteria were found. When this condition existed in nulliparæ, or to a marked degree in primiparæ, it was extremely suggestive of a cervical gonorrhea.

Another indication to be considered was posterior parametritis, which consisted of a slowly progressive chronic infiltration of the uterosacral ligaments and the pelvic connective tissue surrounding the posterior fornix. Usually there was associated with this a chronic cervical catarrh.

In many cases of curettage for primary sterility or uterine catarrh the patients became distinctly worse, and in many instances the dilatation of the cervix and the curettage gave pelvic pain and temperature. When infection of the usual septic character could be excluded one was forced to the conclusion that dilatation of the cervix and curettage often set into more active being the slumbering cocci of an unrecognized gonorrheal catarrh of the cervix and uterus. Sterility in many cases was to be referred to lesions of the tube. In a sterile woman with well-developed uterus and ovaries, in whom stenosis of the cervix and the internal os could be excluded, the cause of sterility must be referred to the tubes. In these cases one might safely take it for granted that there existed a mild inflammatory involvement of the Fallopian tubes, perhaps affecting only that part close to the uterus, but sufficient to destroy the activity of the ciliated epithelium, with the result that the ovum could not enter the uterus. In this way one might explain cases of pregnancy occurring years after marriage by the natural resistance of the patient and the restoration of the tubes to their normal condition.

Ectopic gestation might be referred in the majority of cases to some obstruction in the inner lining of the tube. The tubal mucosa having become inflamed, or the ciliated epithelium not functioning, the ovum passed along the tube up to a point where there was an obstruction, rested there, continued its growth, and ectopic gestation followed.

Dr. Bandler said the main reasons why the condition to which he had referred constituted unrecognized forms of gonorrhea were twofold. Either the original gonorrhea was so situated as to cause bearable annoyance, or the original infection was of so mild a character as to not attract the attention of the patient at the time. These were the result of old, chronic, supposedly cured or supposedly harmless involvement of the prostate or seminal vesicles in the male. Many women with a cervical gonorrhea which remained localized often went through successive pregnancies without any particular symptoms. Many observers would not admit that there was a difference in the virulence of gonococci, and explained the difference in intensity of the disease by the

difference in resisting power of the patient or in the location of the lesions, but he was of the opinion from clinical experience that there were different gonococci possessing different degrees of virulence. It was natural to suppose that where there were few gonococci, and these found with difficulty in the male prostate years after the original infection, they might be the cause of less acute involvement of the cervix than the cocci from a fresh or recent gonorrhea in the male. Furthermore, while he had no warrant for the statement on the basis of experimental truth, he might quote the opinion of Dr. Klein that "acute gonorrhea in the female came from acute gonorrhea in the male, and that subacute gonorrhea came from a chronic subacute disease in the male." The subacute form had none of the symptoms of the acute form, often presenting only discharge.

DR. REUBEN PETERSON thought that the vital point under consideration was the treatment of gonorrhea. There were two main varieties in those cases where the adnexa were involved. In one there was very little pus in the tube, but the tubes and ovaries were bound down by adhesions. In the second class of cases there was double ovarian abscess, and only in this class of cases had the treatment changed. In regard to opening the abdomen and removing the pus tubes, he had found his mortality large. In 1896 he had a patient who refused to let the tube be removed, so he opened the sac through the vagina and let out the pus. The result was so satisfactory that now he seldom operated through the abdomen.

DR. TABOR JOHNSON said that the importance of the two papers could not be overestimated. It was astonishing that seventy-five to ninety-five per cent. of these cases that required operations were due to the gonococcus, and fifty per cent. of all the cases all over the world were due to this cause. A very large number of women suffered from infection, even though ignorant of it, and many sterilities were due to the action of the gonococcus upon the mucous membrane. The question of race suicide was one that was largely affected by this disease, for fifty per cent. of the cases of sterility in the female and fifteen per cent. of those in the male were due to this cause.

DR. LEWIS L. MCMURTRY wished to call attention to Dr. Peterson's method of treatment. He thought that he ought to return to the abdominal route, for he knew of no class of patients in which the result was more satisfactory. It was his opinion that operation by the vaginal route was wholly incomplete, and that the conditions were likely to return when it was employed.

DR. EDGAR GARCEAU said he believed that the most important point was the treatment of the pelvic organs, and this had materially changed. Ten years ago the mode of operation in Paris was by way of the vagina, and now that method was out of date and not to be considered. However, he thought many would hesitate to make an abdominal incision where the patient was *in extremis*, but in that case drainage might be made through the

vagina, and afterwards, if necessary, an operation through the abdomen might be performed.

DR. CHARLES F. BACON believed in doing everything to favor nature's cure. Lying still and rest were often the best remedies. Local applications were very unsatisfactory.

DR. LAURA H. BRANSON said she had noted the statement in medical journals to the effect that in men fifteen per cent., and in women seventy-five per cent., of sterility was due to gonorrhea. This statement indicated the importance of the subject and the necessity for its limitation. She would call attention to one feature that might be of aid in the diagnosis, and that was stricture of the female urethra. The stricture itself might be the only symptom, and in a number of cases she had been able to trace a history of infection from this one symptom.

DR. PRICE did not think that the curette was of great assistance in determining the uterine condition, nor did he favor the vaginal route. Nature and her methods were undoubtedly the best. In cases where an operation was necessary ten per cent. had obstruction, adhesions, etc., that had to be relieved, and by the vaginal route this could not be done satisfactorily.

DR. P. A. HARRIS said it was his opinion that the use of the curette ought to be limited to a few cases that had been passed upon by a board of examiners. He thought further that no one would criticise Dr. Peterson's stand where the case was *in extremis* or where circumstances demanded immediate drainage and relief. There were many cases of unrecognized gonorrhea in woman, and he wished to call attention to the fact that it was the great sterilizer, as it was also one of the greatest factors in causing ectopic gestation.

DR. DANIEL H. CRAIG said he knew of no field in which so much was taken for granted as in gonorrhea in women, for when no other reason was found for an existing condition it was attributed to gonorrhea. He had been surprised at the number of times there had not been a gonorrhea when it was logically expected, and he thought many cases were being classed where they did belong. As to the thickening behind the cervix, it was his opinion that most of it was purely protective.

DR. T. S. CULLEN said that in four cases of pus tubes there might probably be one case of endometritis, and the fact that the endometrium was often normal spoke against the use of the curette. The question of operating from above or below was one that had to be decided in each individual case. It might be necessary to drain from below and operate from above at the same time.

DR. W. H. CHANDLER said that lactic acid could be injected into the mucous membrane for the destruction of the gonococci, and if done slowly it would not produce sloughing. It was his opinion that to dilate and curette was simply to extend the infection.

DR. BOLDT said that Dr. Peterson's stand was correct, and that many patients would be saved by drainage per vaginam who could not stand an operation. The question he was interested in mostly was whether extension could be prevented by radical treatment.

DR. BANDLER said that he thought there might be forms of gonorrhea that were milder owing to the resisting power of the patient, but it was oftener due to lack of virility in the bacteria.

SUBTOTAL ABDOMINAL HYSTERECTOMY, WITH TOTAL EXCISION OF
GLAND-BEARING TISSUE OF THE CERVIX AND A PER-
FECTED RESTORATION OF THE SUPPORTING
LIGAMENTS.

DR. WILLIAM F. METCALFE sketched the development and gave the history of abdominal hysterectomy and described the technic of the operation and the line of incision through the pelvic structures. He described the cervical remnant and advocated the removal of its entire gland-bearing tissue. In order to restore the ligamentary supports, the infundibular and round ligaments were sutured together at the pelvic brim, and to these points at either side the lateral portions of the cervical remnant were brought up and sutured. Over the hummock thus formed was thrown the peritoneal flap previously removed from the anterior surface of the uterus, thus affording a permanent support to the bladder. The result of this method of operation was entirely satisfactory from the fact that it gave relief, could be easily performed, and offered a support to the tissues that would not relax and give trouble in the future.

PLASTIC SURGERY OF THE PELVIC STRUCTURES.

DR. HENRY O. MARCY described the reconstruction of the pelvic peritoneum after the ablation of the uterus and its appendages. The purpose was to permit as far as possible the leaving of an undamaged peritoneal covering. He advocated the free dissection of the vaginal structures and the restoration of its subjacent structures, especially in hernia of the bladder, vesicovaginal fistula and in cystocele. Dr. Marcy presented the technic he employed in restoring the perineum in incomplete and complete laceration by lateral dissections of the vaginal muscle and reuniting the transversus, levator ani, and the other torn structures. He advocated the use of the buried animal suture as the important factor in the technic for the plastic restoration of this group of injuries.

BURIED SUTURES AND LIGATURES, THEIR MATERIAL AND PROPER
USE.

DR. WALTER B. CHASE said that the use of buried sutures and ligatures constituted an important part of most operative procedures and their selection and application was of far-reaching consequence. It was within the remembrance of those present when silk was practically the only material used for ligatures and

sutures. A proper appreciation of the germ theory revolutionized the whole procedure, and as a result the tendency was to use absorbable material for buried ligatures and sutures. There had been a widespread belief that the occlusion of a vessel was due more to the continued presence and pressure of the ligature than to the unseen plastic and absorptive changes in the structures incident to its application. This fallacy found expression in the belief that the safety of occluding a vessel by ligation bore a close relation to the tightness with which it was applied. It could be assumed from the surgical and practical standpoint that more ligatures were tied too tightly than too loosely. It was surprising how little circular pressure by ligature was sufficient to prevent hemorrhage, while tying too tightly predisposed to the risk of secondary hemorrhage. Most small vessels, if properly tied, would become effectually occluded in a few hours, while a ligature which lasted from three to five days usually gave all the safeguard of one lasting double that time. There were but few contingencies which would require the use of unabsorbable material. An unabsorbable ligature was a foreign body, a menace to produce pain, ulceration, suppuration, and possibly sepsis. Not long since he had heard a gynecologist exultingly declare he had devised a hook which he could introduce through the sinuses occasioned by unabsorbed silk ligatures, and pull them out, thereby avoiding an operation for their removal—apparently oblivious of the fact that he ought never to have used them. Sterilized catgut, plain or chromicized, and kangaroo tendon of proper size, had all the advantages of other material. Some might give instances of infection following their use; but that alone was not proof that the suture was a source of infection, for the difficulty of rendering the hands sterile was universally admitted. As to the risk of infection, it might be affirmed with propriety that the same objection could be raised to silk or any other material. Catgut should be taken from a sterilized package, and any portion not used should be destroyed. In tying large pedicles the same precautions should be taken as with other materials, such as a second encircling with the ligature, a reinforced stitch, or a transfixion to prevent slipping. The duration of catgut in the structures was not to be lost sight of. Plain catgut ordinarily lasted from three to ten days, a chromicized gut from ten days up, according to the degree to which it had been chromicized. It was important to remember that catgut could be so overchromicized as to render it unabsorbable and make it as objectionable as silkworm gut. In his own practice, he had not used buried silk sutures or any unabsorbable material half a dozen times in twenty-five years, and his experience convinced him of the safety and superiority of catgut. He thought some operators used too large catgut in the ligation of bloodvessels. It was only the larger bloodvessels that required a plain catgut about No. 1. There was one precaution needful in the use of plain catgut, namely, to finish the tying by an extra

knot. With this precaution catgut was as safe as silk. He considered it superior because of its ready absorbent ability, and especially should it be used only in tissues where there were ulcerative and necrotic changes. He was glad the number of operators were diminishing who used metallic wire or silkworm gut as sutures, for these often caused bad results by acting as foreign bodies and occasioning suppuration and avoidable infection. He wished to again allude to the undue tension which many operators used in applying sutures. Not satisfied with a reasonable degree of tightness, they sometimes increased the tension to such a degree as to risk cutting through the tissue. If it were remembered that under many conditions swelling was likely to follow in the course of such sutures, the risk of the danger alluded to would be better understood. There was one matter which demanded special attention. Was chromicized catgut as safe as silk in intestinal surgery? The point was whether the chromicized catgut retained the approximation of intestinal suturing long enough for safe union. Through inquiry and careful observation he had demonstrated its safety. It was his belief that the aversion to and lack of confidence in the use of all forms of catgut arose from failures, before the methods of its preparation were perfected, to render it sterile, and the employment of such treatment incident thereto as would imperil tensile strength.

SOME ADVANCES IN URETERAL AND RENAL DIAGNOSIS.

DR. CHARLES LESTER LEONARD said that every means possible should be employed in making the diagnosis of ureteral or renal calculus. Improved methods had resulted in a clearer differentiation between symptoms that had been considered identical, and now it was possible to get more accurate knowledge of the lesion than before. The exact localization of calculi had led to a grouping of symptoms around the most common seat of impaction, and a comparative study of those symptoms led to conclusions that were valuable in determining other conditions. The present status of diagnosis in urinary calculus had been much improved by the use of the Roentgen ray. After a careful study of the symptoms which were not themselves sufficient, it was possible to get further aid by use of the Roentgenogram. In order that a Roentgenogram be of practical service it must embrace a picture of all the urinary tract, and one picture was not enough in itself for a diagnosis, for while it might be a beautiful picture it might also be deceptive. In order to show the entire urinary tract the plate should be 12x20, and several pictures should be taken for comparison. It should be remembered that the Roentgenogram was useful in diagnosis, both by confirmation and by exclusion, but it required an expert usually to correctly interpret the picture. In a total of one hundred and fifty-six cases the number of errors was less than three per cent., and in a total of one hundred and six cases a positive diagnosis had been made without an error.

THE SURGICAL TREATMENT OF URETERAL CALCULUS IN THE FEMALE.

DR. EDGAR GARCEAU called attention to the difference in the ureter in the male and the female on account of the anatomical relations. The ureter in the male was straight, and its position in the pelvis was such that it was comparatively easy of access through an extraperitoneal incision. In the female the broad ligament was above the most dependent portion of the ureter and made it much more difficult of access. In cases of impacted stone between the base of the broad ligament and bladder, it was usually possible to make an entrance through the vagina, but when the impaction was between the superior strait and base of the broad ligament it was often difficult to reach. The following routes might be considered in the treatment of stone in ureter; the transperitoneal, the transperitoneal and extraperitoneal combined, the hypogastric, the urethrovesical, the rectal, and the vaginal. In many cases it was difficult to decide which operation was the best to perform, and again it was possible in many cases that a stone that had been impacted for a considerable time would pass into the bladder without any change in the kidney. While not all stones would block the urine entirely, still he considered expectant treatment dangerous. Whenever it was practicable he thought that the vaginal route should be selected for the operation. The vaginal operations were: simple incision through the vaginal wall; combined extraperitoneal and vaginal incision; crushing the stone in the ureter through the vagina; Doyen's operation through the anterior cul-de-sac, and the author's operation through the anterior cul-de-sac and vagina. After discussing the various forms of operations, Dr. Garceau said he wished to present an operation that he had devised in an urgent case. The patient had been suffering excruciating agony for a week while attempting to pass a stone that was impacted in the left ureter. She had recently been delivered of a child by an operation that involved the loss of a great amount of blood, and though the vaginal route seemed impracticable, he decided that it was impossible to go through the abdominal wall. He decided to try to push the stone toward the vagina, and thus let it act as a guide for his incision. He found that this was possible, and incised the anterior cul-de-sac and pushed the peritoneum between the bladder and uterus back. He then everted the broad ligament backward with the end of his finger, caught the stone with the tip of the finger, brought it down toward the vaginal outlet, cut upon it with a small incision and squeezed it out like squeezing the stone out of a ripe cherry. The operation proved entirely satisfactory, required only ten minutes for its accomplishment, and the patient recovered.

DR. HUNTER of Washington was pleased that Dr. Leonard had set forth all the methods of importance that would aid in diagnosis, and especially with the fact that he had advised the use of all of them. In his own experience he was never satisfied with

the *x*-ray picture alone or with a waxed catheter alone. He had seen cases where the *x*-ray had missed a large stone when embedded in fibrous tissue, and in some cases it might indicate the presence of a stone where none existed.

DR. PERCY BROWN said he would like to emphasize the necessity of preparing patients before taking a Roentgenogram. He always began this preparation twenty-four hours before by giving a cathartic and cleaning out the lower bowel by means of an enema. The patient should take food sparingly at the previous meal. With these precautions the question of previous urinary findings could be put aside, and by this method one could usually rely upon the results obtained. Phleboliths should be seriously considered. He had been astonished to see how small a phlebolith would produce a distinct shadow.

DR. BRANFORD LEWIS suggested great care in drawing conclusions from the *x*-ray, for mistakes would arise even with the best. He remembered one case where a Roentgenogram showed an object in the right ureter, and a diagnosis of stone was made, but on incision no stone was found. He also cited a case where Dr. Seeley detected a little object that had the appearance of a stone, but proved to be a concretion in the end of the appendix. It was removed. He had never subscribed to the infallibility of the *x*-ray or the waxed catheter. As to the treatment, he would like to ask what was the use of making an incision if the calculus could be gotten out without an operation, and many of them could be removed by working through the cystoscope.

DR. CHARLES P. NOBLE remarked that one ought to be able to locate a stone with the *x*-ray and the waxed catheter without going back to the dark ages, and he believed it was often better to make two incisions instead of one long one, or the incision might be made through the rectus muscle, and thus all the needed room be secured.

DR. LEONARD, in closing the discussion, emphasized the fact that he did not think we had anything that was infallible. Dr. Lewis had asked what was the use of operating if the stone could be removed through the aid of the cystoscope, but he would ask why even that should be employed if the patient would pass the stone by herself. He had already spoiled thirty-one operations by giving the patient time to pass the stone. In addition to the Roentgenogram he recognized the value of the waxed bougie in detecting stones in the ureter. The fact that the ureter was capable of extensive dilation made it possible in many cases to remove the stone by that method, and it should certainly be tried in all cases where time permitted.

CYSTOCELE.

DR. CHARLES P. NOBLE said that cystocele was a hernia of the bladder into or through the vaginal opening, and that it was generally described as a prolapse of the anterior vaginal and bladder walls. He thought that the tonic condition of the abdominal

muscles and the intraabdominal pressure drove down upon the surrounding tissue which lacked its proper anatomical supporting ligaments of the uterus and bladder which played their part in the maintenance of the pelvic organs in their position. The greatest factor, however, was the lack of integrity in the sacral segment of the pelvic floor. This was the reason why cystocele occurred only secondary to impairment of the pelvic floor. The exceptions to this were in cases of marked muscular relaxation of the pelvic tissue or absorption of the perivaginal fat. Injuries which caused damage to the pelvic floor involved laceration of the pelvic muscles and fascia. In consequence of this a pouch of the bladder greater or less in size was pushed down with the anterior vaginal walls into the vaginal outlet or entirely outside of the vaginal canal. Cystocele was often complicated, and in many cases required restoration of the entire vaginal walls with as much detachment of the bladder as would permit it to rise to its normal position in the pelvis. Normally the ligaments of the bladder were of service in supporting it in position; but in these cases the uterus and the bladder both fell, and the pelvic contents were supported only by the sacral segment of the pelvic floor. The position of the uterus itself was of prime importance. If it were retroverted the intraabdominal pressure tended to force the uterus down and out of the vaginal canal, and thus the vaginal walls were forced down. Dr. Noble called especial attention to the fact that the chief credit for placing the operation for cystocele upon a sound basis was due to Dr. Hadra of Texas, who was the first to recognize that the way to cure cystocele was to incise the anterior vaginal wall, separate the bladder from the entire face of the uterus and also from the vaginal wall sufficiently to permit it to rise in the pelvis; then to resect the anterior vaginal wall sufficiently to get rid of the excess of tissue and to fill in this by suturing the anterior vaginal wall up to the anterior face of the cervix, so that it might become attached and thus prevent the descent of the bladder. All of the operations since introduced were based upon this principle set forth by Hadra. In view of the fact that cystocele was generally associated with rectocele and prolapse of the uterus, due to injury of the pelvic floor, and also often with the retrodisplacement of the uterus, the operation necessary for cure of the lesions should always be carried out at the same sitting, and thus insure a permanent and good result.

Dr. Noble described the technic as follows: The uterus was curetted and the cervix was amputated if necessary. The cervix was drawn down with the volsella forceps and another forceps attached to the anterior vaginal wall near the internal orifice of the urethra. Traction was made until the vaginal wall was stretched. A strip of the vaginal wall was incised between the two points and the bladder laid bare. The vaginal walls were seized with the artery forceps and the bladder was dissected in front of the cervix and along the front of the uterus as high as

the internal os, until the bladder rose of its own accord. The redundant tissue of the vagina was excised, care being taken not to cut away too much. Two rows of buried half-hitch continuous sutures were introduced, the first embracing the deeper layers of the vagina and catching up some of the bladder tissue for the first inch or inch and a half, and then suturing the deep layers of the vagina to the under surface of the cervix. Then the superficial row was put in place. The result of this operation was almost uniformly curative, provided the operation not only elevated the bladder and restored the anterior vaginal wall, but also restored the sacral segment of the pelvic floor and secured the uterus in a position of ante flexion.

A SIMPLIFIED CYSTOCELE OPERATION.

DR. D. TOD GILLIAM said the operation consisted of (1) a denudation of the most prominent part of the cystocele; (2) dissecting flaps from the vaginal wall on either side of the denuded area with which to cover it; (3) bringing the flaps together over the denuded area and suturing them to it and to each other.

Technic.—(1) Lift up the redundant tissues, and by means of tenacula or tissue forceps gather them into a longitudinal fold along the median line of the anterior vaginal wall. (2) Make an incision on one side of, and at the base of the fold at or near the median line. This incision should extend from within one-half of an inch of one end of the fold to within a like distance of the other end. (3) Carry the incision down through the fascia to the muscularis of the bladder. (4) Make a similar incision on the other side of the fold. (5) By blunt dissection separate the bladder from the vaginal wall, from the incision outward to the sulci. (6) Convert the two separated layers of the vaginal wall into flaps by cutting outward from the upper and lower extremities of the incisions toward the sulci. (7) Denude the area between the incisions. (8) Draw the flaps over the denuded area and suture them to it and to each other from below upward. Dr. Gilliam said he had found this simple operation very satisfactory, and wished to recommend it to the profession.

DR. J. RIDDLE GOFFE said that there was but little that was new in the operation as presented by Dr. Noble, and he differed entirely from the author as to the mode of operation. It was his theory that nature's plan of supporting the organs of the body was suspension, and this was accepted by the profession until it came to the organs of the pelvis. It was his opinion further that the perineum was not intended as a support of the pelvic organs, and only when it was torn did it have any influence, and then it acted against nature. The fact that cystocele occurred in virgins was evidence that the theory of perineal support was not correct. Even where there was complete laceration of the perineum the organs stayed in their place, and any building up of the floor of

the pelvis was futile in holding the bladder and uterus in position. The bladder, like the other organs of the body, was held in its position by ligaments and not by props. It was supported by and hung from the uterus, and the natural operation would be to put the uterus into its normal position, dissect the bladder away from it, and stitch it higher up on the uterus, thus suspending it from the uterus as nature intended.

DR. EDWARD REYNOLDS said it seemed to him that Dr. Goffe unnecessarily opposed the rest of the profession, and that he erred when he claimed that they did not believe in the suspension of the organs of the pelvis. They did believe in suspension of the pelvic organs, but they also believed that the perineum acted as a support.

DR. I. S. STONE said that in many things he agreed with Dr. Goffe, but it seemed that he made his statements a little radical. In a number of cases the perineum had been entirely torn, and yet the uterus and the tissues remained uninjured. He had been satisfied with the operation for the support of the uterus.

DR. NOBLE had not seen more than a half dozen cases of cystocele in virgins in twenty years, but nearly all of the cases occurred in multiparæ. The fact should be remembered that complete laceration did not injure the levator muscles. In the operation as described by him the bladder rose in the pelvis and no puckers were formed, but Dr. Goffe in his operation put in sutures and made puckers.

DR. GILLIAM said he was surprised to find a man of such great learning along other lines as Dr. Goffe carried away so that he could see nothing but suspension. Nature was liberal, and God supplied ligaments and walls and swings and shelves, and was not limited in the means he used. If the abdominal walls were removed the viscera would not remain in position, and yet it only proved that in addition to suspension there were also supports.

SALPINGITIS CAUSED BY APPENDICITIS.

DR. I. S. STONE said there were two means of transmitting the infection from the appendix to the ovary: by the lymph channels or other vessels and by means of direct contact, as when the pus from a ruptured appendix came in contact with the fimbriated extremity, or when it discharged directly into the tube. In illustration of a salpingitis caused by appendicitis, Dr. Stone gave the following history: A patient thirty-five years of age, white, two children, and with a history of previous good health, was seen with the family physician three days after beginning of appendicitis. The patient was located six miles from the hospital, but her condition was such that it was decided to operate if she could be gotten there. Her pulse was 135, her temperature was 102.5°, and she had no distention, for her bowels had been well cared for by her family physician by means of the enema. On

arriving at the hospital the operation was postponed, and in six days her temperature was normal. He then operated and found necrosis of the appendix and also of a portion of the cecum which appeared the size of a silver dollar. The pelvis was infected, so he decided to delay the operation, replace the tube, and close the abdomen. The patient improved for a time and then developed a temperature and showed that the right side was distended with pus. This was opened through the vagina, and pus was found that had the same odor as that in the pelvis at the first operation. The patient improved again until the tube on the left side behaved in the same way and was opened. After this the patient made an uneventful recovery. Dr. Stone said that the medical profession was sceptical when it considered the cause of infection in young women. Doubtless many were unjustly suspected. It might be considered impossible for appendicitis to cause a salpingitis or *vice versa*, but in this case narrated he had found large pus tubes, a perforated and gangrenous appendix, and in all of them the colon bacillus which indicated an intestinal origin. It was his opinion that, as a rule, the Fallopian tube became infected secondarily, *i.e.* by extension from the appendix to the tube.

THE EARLY DIAGNOSIS OF TUBAL PREGNANCY.

DR. PHILANDER A. HARRIS said that twenty-nine out of thirty cases presented symptoms in which a presumptive diagnosis could be made prior to any alarming conditions. It was formerly supposed that the first symptoms of ectopic gestation were pallor, a weak and rapid pulse, a subnormal temperature, and probably syncope. He wished to direct attention to two stages, *i.e.* the nontragic and tragic. The nontragic embraced those cases where there were symptoms that were in themselves diagnostic, and for which the patient usually consulted her family physician, while the tragic cases included those who had gone to the point of rupture, collapse, etc. In a series of one hundred and thirty cases, 90 per cent. had consulted physicians on account of conditions referable to the pelvis before the tragic stage. Dr. Harris said he wished to present the following statements: (1) Many received medical advice for a term of several weeks before the tragic stage. (2) Many were wrongly assured, and relied for days and weeks on false hopes. (3) A large number were told that an ordinary abortion was threatened. (4) About 20 per cent. were subjected to the operation of curettage for cure of metrorrhagia. (5) Some were not able to follow their usual vocations. (6) Only 20 per cent. of the physicians consulted arrived at the right diagnosis. (7) In three instances only, out of more than one hundred and thirty cases, was he the first physician consulted. (8) Ninety-nine of the cases, promptly operated on in the nontragic stage, recovered promptly. (9) It was easy to arrive at a presumptive diagnosis of ectopic gestation.

Dr. Harris said that if these assertions were correct the burden of responsibility rested upon the obstetrician and the general practitioner. When he had been asked how to diagnose ectopic gestation he had answered: "When any woman after puberty, and before the menopause, who had menstruated regularly and painlessly, went four, five, six, eight, ten, fifteen, or eighteen days over the time at which menstruation was due, saw blood from the vagina differing in quality color, quantity or consistence, from her usual menstrual flow, and had pain, generally severer in one side of the pelvis or the other, or possibly in the hypogastric region, ectopic gestation might be presumed."

The two items of greatest value in diagnosing ectopic gestation in the nontragic stage were *atypical menstruation and pain*. Emphasis must be put upon the necessity of a careful history in each case, including that concerning previous menstruation and childbirth. In the nontragic stage the pulse remained about normal, but if a quantity of blood had been lost in the abdomen the pulse would be found quickened, patient weakened, the temperature below normal, and the amount of blood thus lost to the circulation would be sufficient to at once cause alarm or imperil life, for the tragic stage was reached. Dr. Harris said that he had but one case that refused operation in the tragic stage, and she consented six hours later, but died in transferring from the ambulance to the hospital. It should be remembered in dealing with women in the nontragic stage that one-half to two-thirds of all cases uninfluenced by operation eventuated in death, but if operated upon ninety-nine cases in one hundred got well.

DR. FLORUS LAWRENCE agreed with Dr. Harris that the time for diagnosis was before rupture took place. He had had three cases under his care within a short period and in each there was a history of a previous tubal disease. He considered it an important question whether in an operation for ectopic gestation the operator should leave the other tube or not. In one case where the tube was left it had been necessary to operate within fourteen months for the same trouble, and in two other cases the patients had died in a second extrauterine pregnancy. He had seen some cases where a slight temperature indicated that a small hemorrhage had occurred and nature was trying to protect herself and throw off the resulting condition. He thought that pain, intermittent in character, uneasiness, breast changes more marked than in normal pregnancies and irregular flowing were symptoms of grave importance.

DR. HARRIS said in conclusion that he considered that if nine correct diagnoses out of ten were made it was as much as could be expected. It had been his custom to say that he was sometimes wrong. As to the question of tenderness preceding rupture, it was his opinion that it would be found in nearly every case and that the examiner should always exercise great care when palpating or he might produce a hemorrhage.

CONSTITUTIONAL ILL-EQUIPMENT OF THE PATIENT AS A FACTOR IN
DETERMINING THE PERFORMANCE OF THE
PRIMARY CESAREAN SECTION.

DR. EDWARD REYNOLDS said that these cases might be divided into three classes. The first class embraced those in whom the expulsive efforts of labor had failed to drive the head through the pelvic brim; the second class included those in whom there had been a moderately full test in labor, but not extending to the point of exhaustion, and the third class included those that were operated upon before labor. In a total of two hundred and eighty-nine cases by different operators in different parts of the world, forty-nine came under the first class, a hundred and fifty-eight under the second class, and eighty-two under the third class. One patient belonging to the third class died as the result of rupture of the sutures, which was the fault of the attendant. The mortality in these classes, including this one patient, was twelve per cent. in the first class, eight per cent. in the second, and one and two-tenths per cent. in the third. As a rule, in this class of patients the mortality might be estimated by the duration of labor endured before operation. Late section had become entirely discredited, and was never performed by experienced operators who had had the patient under their care from the beginning. He thought the secondary operation was still too much in favor with the profession, but the performance of the primary operation had now become the custom all over the world. He said that Dr. Edgar claimed that while the mortality of the operation must be admitted to be proportionate to the length of labor endured before its performance, the mortality rose very little during the first few hours of labor, and therefore a slight test in labor might be considered justifiable. Dr. Reynolds said that this statement was doubtless correct, but the slight amount of labor would indicate but little concerning the ability of the patient to complete it successfully, and he considered therefore that it was important to decide for or against Cesarean section before the time of labor. To this end it was important that the physician consider carefully all the elements that entered into the case under consideration. He must bear in mind all mechanical obstructions, the past history of the patient, and her general condition. Where there was a history of a multipara who had in previous pregnancies failed to bear the child, necessitating instrumentation with death of the fetus, the indications would be for Cesarean operation. In cases of primiparæ it was often difficult to decide, but the personal character of the woman would have much to do in making a decision. Some women had great ability to bear pain and some, though healthy in appearance, could not. It should be remembered that labor was a muscular function, and its efficient performance depended upon the possession of muscular power and capacity to endure pain without undue exhaustion. This power was largely the result of good eliminative organs and heart muscle. Occasionally

a man or woman who was frail in appearance had the greatest amount of endurance, but this was not often found in the luxurious class. A surgical axiom was that it was always wise to recommend a relatively safe operation rather than to subject the patient to the chances of a late operation for a doubtful and uncertain condition.

DELIVERY OF DEBILITATED WOMEN ; WITH ESPECIAL REFERENCE TO
THE INTEREST OF THE CHILD.

DR. EDWARD P. DAVIS said that while labor was a spontaneous and successful process which prohibited interference, nevertheless the indiscriminate application of this idea had cost the lives of many women and children. The practitioner met cases from time to time in which women were not able to give birth to children unless special consideration was given to the case. In these cases the physician might employ different methods, for instance, where a frail woman had a large husband, he might attempt to modify the size of the child by means of diet; encourage spontaneous premature labor by free exercise; interrupt pregnancy at some time selected by himself, or permit it to go on to term and be prepared for any emergency that might arise. It was his opinion that the dieting of the patient was of uncertain and doubtful benefit. There was great likelihood that it would have more deleterious effect upon the health of the mother than it would have in modifying the size of the infant. In many cases where labor was induced at a time set by the physician the results had been excellent, and he was inclined to favor this as a general rule. Some practitioners substituted pubiotomy for abdominal operations, and in cases where he had tried this the results had been fairly good, but not as good as in the Cesarean section. As a general rule it was his opinion that abdominal section, especially in cases selected by a consideration of all the conditions, compared well with all other methods for both mother and child.

A BIMANUAL METHOD OF ROTATION IN OCCIPITO-POSTERIOR VERTEX.

DR. WILLIAM D. PORTER had found that the use of forceps in rotating the head in the occipitoposterior position had proved very unsatisfactory, producing trauma to the mother and risking the life of the child. He had been using his hands in producing rotation of the head and from long experience was convinced that it was a useful method. Of course, when the head was impacted it was difficult to grasp it, and especially to get hold of it on account of its slipperiness. He used one hand with the palm toward the head of the infant in the vagina and with the other he made pressure above the pubes. For instance when the occiput was in the right posterior position he inserted the left hand with a turning motion and then made pressure from above with the right hand, thus, grasping the head between the two, he untwisted, as it were, the arm of the left hand and swept

the head of the infant around to the position desired. The method of inserting the hand was important, for having the arm partially rotated gave it greater strength when pressure was made upon the head to turn it into the desired position. Before performing this operation the patient was anesthetized, placed cross-wise of the bed, and the operator sat facing her. When the head was in the left occipital position the right hand was used in the vagina. He had found the method a very successful one, without damage to the mother or child, and one that avoided the possibility of injury to either.

DR. WALTER B. MANTON had often tried various methods in order to change the occipito-posterior position and in most of them had failed. In private practice the physician usually got in too late to see the case in time, and there was not much chance of doing anything but let nature go ahead or apply the forceps. This condition occurred largely in elderly primiparæ and in these patients the tissues were stiffer and more fibrous. He thought that if the physician got to the case early this method was a good one.

DR. PORTER said that the application of forceps without rotation of the head was dangerous. He thought that impaction of the head by natural forces was rare, but the action of closing the forceps and rotating to the antero-posterior position was likely to result in impaction.

THE SYNCYTIIUM.

DR. LAURA H. BRANSON said that syncytial tissue was of fetal origin, possessing the power of proliferation, and it was in indirect line from the ectodermo-trophoblast. The chorionic villi or parts of them, together with their epithelial covering, might normally circulate in the vascular and lymphatic circulation of the host. It was possible for this circulation to take place during the period of pregnancy from the formation of the chorionic villi even to the termination of labor. The epithelial covering of the chorionic villi had the power of proliferation and this might take place during the entire life cycle of the syncytium and Langhans cells. The syncytium had a physiological function. If foiled in this function its pathology might prove injurious to both fetus and host. It was the prime factor in the production of a neoplasm whose history placed it in a class by itself: syncytioma malignum. The theory of the syncytium as a prime factor in producing eclampsia was one that was upheld by all recent investigations. It was the one cause that could meet all the claims made by recent investigations and theories, for it occupied the middle ground and met all theories and requirements with the tested results of intelligent investigation. Hepatic changes were the rule and not the exception in eclampsia. Many microscopical examinations had been made which tended to prove the assertion. The changes in the liver observed in eclampsia might be

explained also as being caused by the syncytium, if the function of the liver were weakened previous to the ushering in of pregnancy. Then it would be unable to do its part in ridding the circulation of these emboli and of this toxin.

Malignant neoplasms of pregnancy had an eroding action upon the structure of the uterus and this was the nature of the chorionic epithelium covering the villi. Normal chorionic epithelium was also one of the constituents of these neoplasms. It was therefore reasonable to conclude that their origin was the same and that this activity remained in force in the neoplasm. She believed that the future of chemistry would go to show the natural cell constituents and to differentiate the normal constituent of the cell from the product of their ferment metamorphoses taking place in the different neoplasms. She believed the future outlook of biological research was teeming with promise in this particular field and hoped for great results as to cell processes in general with the power to differentiate between the normal and the pathological changes taking place within the cell. The study of the cause of cell proliferation opened up an arena pregnant with hope, and the greater the knowledge of cytomorphoses the greater would be the understanding of cell proliferation. Cell growth was controlled by certain stimulating and inhibitory influences; the knowledge of these would explain many of the unknown phenomena, and this knowledge might also explain the cause of progressive metamorphoses that were attributed to the cells of many neoplasms, particularly of the malignant neoplasms.

SARCOMA OF THE UTERUS, WITH REPORT OF NINE CASES.

DR. ELLICE McDONALD said that the subject under consideration had not been discussed extensively up to the last nine years. In more recent years it had been entered into more thoroughly, and it was found that many cases that had been diagnosed and considered as simple fibroid tumors had proved to show also sarcomatous changes. Dr. Noble had reported 2,200 cases in which there were about two per cent. of fibroid tumors that were fibromyomata. The cervix was not often the site of the disease and sarcoma of the cervix was very rare. The fundus of the uterus was more often affected, and sarcoma of this region could be divided into the diffused and circumscribed. The diffused type was the more malignant and caused extensive hypertrophy. The usual results of these conditions was hemorrhage, metastasis, and pathological changes in the surrounding tissues. In 165 cases 45 were subperitoneal, and of the others, 63 were submucous. The submucous sarcoma was usually a fleshy mass, very malignant, and producing severe hemorrhage. It had been proved by staining muscle fibers in these tumors and connected tissues that there was a direct transition from muscle cell to myomatous cell. Dr. McDonald presented specimens which showed the changes that had taken place in the various tumors, and in four of these was

demonstrated the change from fibrous tumors to sarcoma. In other cases the patient gave a history of fibroid tumor for some time. He had seen three cases in which there was a new growth. It could not be said positively that sarcoma was always derived from a fibroma when they were together, but it was probably the case. When examining specimens it was important to cut them in such a way that the different parts of the tumor were exposed and microscopical examination should always be carried out.

DR. NOBLE had had four cases of sarcoma, and only during the last seven years had he made it a rule that every specimen of fibroma should be examined microscopically. Previous to that he had only the suspicious looking ones examined. There was no doubt that if the fibroid tumors were systematically examined more sarcomata would be found.

DR. CRAIG said that he had had three cases of sarcoma in the uterus. One was very early in the disease and one was further advanced. These two cases had sarcoma of the fundus. One of them died by metastasis and recurrence and the other recovered. The third case had been supposed to be fibroid.

DR. CARSON had seen a number of cases of fibroid tumors which had later become malignant and fatal. He thought that fibroid tumors ought to be removed, for he considered that the woman who had a fibroid was in danger.

DR. WALTER B. DORSETT said that in years gone by he had postponed operations and wished to plead guilty to having had considerable faith in electricity at one time. He cited a case of a woman with a small pedunculated tumor of the fundus of the uterus which in five or six years weighed eight pounds. She developed fever and was treated for malaria and consented to have an operation after the malaria had subsided, but it did not subside. Finally, she was placed on the table with a pulse of 120, was operated on, and a large tumor fed by blood supply from the omentum was removed. It was found that this tumor contained pus. The temperature subsided and the patient recovered. He thought there was no doubt that fibroid tumors changed to sarcoma and carcinoma, and the only cases where an operation should not be performed were the combination of small tumors with pregnancy.

DR. GILLIAM said that he had been conservative at all times in dealing with these cases. While some might remove fibroid tumors with a mortality of one or two per cent., he thought the average was nearer ten per cent. When, therefore, no trouble resulted from the tumor he left it alone.

DR. McDONALD said, in conclusion, that after all he believed he differed from all. In his examinations he had found one fibroid tumor in every seven cases examined, and if we operated on one case in every fifth woman we would do a foolish thing. His report was based on fatal cases, and it was necessary to draw the line somewhere, though it was difficult to do. It was his opinion

that indications for operation should be more or less lasting, and it was his rule to operate where the tumor produced symptoms.

The following officers for the ensuing year were elected: *Chairman*, Dr. Walter B. Dorsett, St. Louis, Mo.; *Vice-Chairman*, Charles P. Noble, Philadelphia, Pa.; *Secretary*, Walter P. Mantton, Detroit, Mich.; *Delegate*, F. F. Simpson, Pittsburg, Pa.; *Alternate*, Thomas J. Watkins, Chicago, Ill.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Prognosis of Breech Presentations.—Gaussel Ziegelmann (*L'Obstét.*, March, 1907) reminds us that in former times the breech presentation was regarded as somewhat less favorable to both mother and infant than the vertex. He has made a study of the records of the Maternity Hospital of Montpellier with reference to the statistics to be gained in breech presentations. He finds that they were somewhat less frequent than in city clinics. Between 1896 and 1906 he finds 53 breech presentations, 32 complete and 21 incomplete. He concludes from tabulation of the records of these cases that breech presentation is almost as favorable for the mother as vertex. The course of the labor is as rapid and as regular, ruptures are no more frequent than usual, and the puerperal period is physiological. For the child the prognosis is a little graver than in the vertex presentation; complete and incomplete presentations do not differ. The disengagement of the feet to assist delivery does not seem to be of any benefit.

Use of the Ventral Bandage During Labor.—Vallée (*Ann. des Sci. Méd. de Lille*, March 30, 1907) describes her method of assisting labor by the use of a bandage placed around the abdomen of the patient so as to exercise a firm compression on the uterus from the beginning of true labor pains until delivery. With this is combined the horizontal position in bed from the beginning of labor. As the fetus escapes from the pressure of the bandage, in the last stage of labor, the hands of the assistant make pressure, following down the body of the child. These means give a point of support to the contractions, and they become regular, strong, and frequent from the time of application of the bandage. The bag of waters is kept intact, and presses down through the cervix, which is directed into the center of the pelvic canal by the rectified position of the uterus. Thus the bag of waters exercises its normal dilating force in the right direction and is most efficient. The patient suffers much less than usual and is less fatigued by the labor. No bad effects on the infant are observed. Labor is much hastened and ends in a few hours. The placenta is much flattened and is delivered rapidly with little hemorrhage, and no clots are

found in the vagina. The method has been successful with all presentations.

Scopolamin-Morphine in Labor.—W. Steffen (*Archiv f. Gyn.*, Bd. 81, H. 21) has observed three hundred cases of labor conducted under the use of scopolamin-morphine injections, at the Krankenhaus at Dresden. Out of 1,335 cases delivered during 1906 only these 300 were thought suitable for this type of narcosis. All cases of contracted pelvis, or that were considered to be likely to have a prolonged labor were excluded on account of the slowing of the labor pains that is found to be the result of the drugs. There are many of the human species who do not bear scopolamin well; even a small portion of a milligram may produce bad effects. For this reason morphine was added to lessen the mental disturbances and excitation, since it quiets the central nervous system. On the fetus morphine may produce arrhythmia of the heart if too large a dose is given. Morphine alone has been found to have a favorable effect on the contractions when the patient has become exhausted. By giving this drug, and allowing a sound sleep of several hours, the patient is rested and more regular, and stronger pains are produced. At first the injections of scopolamin-morphine were given as soon as the regular labor pains came on, but it was found that the pains were inhibited to a great degree by the drugs, and labor was much prolonged. Injections were then given only when strong pains had come on, and later they were given only at the beginning of the last stage of labor, when the most severe pains are experienced. In favorable cases they make the contractions painless, and these go on more strongly and quietly until delivery is accomplished. The patient has no feeling of pain and no remembrance of the labor, sometimes insisting that she has not been delivered and the child is not hers. The woman is not able to control the abdominal pressure, and it is very difficult to protect the perineum. Pressure on the abdomen may be necessary to aid expulsion, on account of weakness of the contractions. The effect on the friends of the patient of the red, congested face, the restlessness that is sometimes seen, and the inability to rouse the patient to natural consciousness is disagreeable, and hence this form of anesthesia is not well adapted to the delivery of cases in private practice. Another difficulty is that the physician must be present and ready to give aid during the entire labor, not leaving the patient at any time to the care of the nurse or midwife. The child when delivered does not cry lustily, and is sleepy, and even stupid. This passes away in about ten minutes, but occasions some anxiety. The author concludes that the effect of scopolamin-morphine is not regular, and every case must be carefully watched throughout its course. Its use is not adapted to all cases of labor, and only primiparæ with normal pelves and strong pains should be treated thus. It is not altogether without danger for mother and child, and is not adapted to private practice.

Length of Time in Bed After Physiological Labor.—L. Bouchacourt (*La Presse Méd.*, May 15, 1907) discusses the time that it is necessary for a patient delivered normally and having a normal puerperium to remain in bed. The length of this time differs in different countries and nations from a few hours to several weeks. Among savage nations it is well known that the mother is confined when on the march, accomplishes her own delivery, and goes on her way with the others. In some country districts it is a matter of emulation among the women to remain in bed as little time as possible before undertaking all the household work, and yet there seem to be few bad results. Among the richer classes, on the contrary, it is the habit to remain in bed a month, and it is difficult to get the patient to leave her bed. The consensus of opinion at the present day seems to be that it is best, in order to secure perfect involution, to remain in bed from two to three weeks, and to return gradually to the ordinary duties of life.

Prolonged Retention of the Ovum After Abortion.—R. Gari-puy (*Presse Méd.*, April 24, 1907) calls attention to the rather frequent, partial, or total retention of the ovum after abortion. The complications that thus arise are hemorrhage and infection. Rarely the entire ovum is retained. The placenta may be retained by the uterus with remarkable tolerance, and the absence of general or local symptoms makes the diagnosis extremely difficult. The placenta may be eliminated in fragments at stool, without the knowledge of the patient. In case of entire retention of the ovum there are no transformations of the tissues. The ovum remains in the uterus for a variable time without any changes and without symptoms and is then expelled intact. When only the placenta is retained it may undergo changes that transform it into a placental polypus, with a proliferation of the connective tissue of the villousities and of their epithelial covering. The persistence of vitality of the adherent placenta is permitted; coagulation of the blood is prevented and circulation continues. There are almost no signs of retention, and it is often impossible to tell whether the abortion has taken place. The uterus acts as it does after a threatened abortion and closes itself on the incomplete ovum as if this were intact. The absence of hemorrhage is explained by the absence of separation of the placenta. If the woman has been examined and pregnancy diagnosed before the abortion, this is an aid to diagnosis; but if this has not taken place the difficulties are greater. There may be no bleeding, and not even a serous flow, or clots may be expelled. Pelvic pains may be absent. Only physical examination will aid us. Closure of the cervix may be normal. There may be a diminution in the size of the uterus, and examinations at intervals may be of service. Modifications of form of the uterus have some value. The consistence will be neither the peculiar soft-

ness of pregnancy, nor a normal hardness, but these differences are evident only to the skilled touch. Metritis and subinvolution complicate the diagnosis, but in these conditions there is often tenderness of the uterus. Having satisfied oneself that pregnancy does not exist, it is allowable to dilate the cervix and remove whatever is found there.

Care of Nipples and Breasts During Pregnancy and Lactation.—P. Lagueux (*Bull. Méd. de Quebec*, April 1907) says that during pregnancy, if the nipples are well formed and not painful, no treatment except absolute cleanliness is necessary. If the nipples are small it is best to use massage in the shape of traction for fifteen minutes daily during the last two months, using boracic acid vaseline as a lubricant. In lactation the breasts and everything that touches them should be kept as aseptic as possible. They should be enveloped in sterilized gauze. The mouth of the infant should be washed, before and after nursing, with boracic acid solution. The patient should not touch the nipples herself. If there are cracks the best application is nitrate of silver, 1-10, applied with cotton on a stick. The breasts should be washed with boracic acid solution. When the patient does not nurse her infant the breasts and axillæ should be enveloped in cotton pads, and a firm bandage applied, which remains on until the milk disappears from the breast. If they become painful and full Rochelle salts should be given. When the patient is nursing a bandage is used to support the breasts. If they become painful massage is used every four hours, given by the nurse, to distribute the milk evenly in the breast. If there is not enough milk the patient should take milk, eggs, butter, and cream. If infection is established massage is most useful to remove the pus from the milk ducts. It should be given at first lightly, then with more pressure, every four hours, with the use of the ice-bag between. When the skin becomes red and inflammation sets in, the abscess must be opened and treated like an abscess in any other place. Incisions should be radiating so as to cut as few milk ducts as possible. The infant may nurse the breast again after the abscess is cured if the milk still remains.

Puerperal Mastitis of Exceptional Gravity.—Trillat and Latrajet (*Lyon Méd.*, March 31, 1907) describe two cases of mastitis of such gravity that the patients died of septicemia. Such cases are of extreme rarity. One occurred on the fifth day after labor, when the mother had suddenly ceased to nurse the infant. In the second it occurred in the beginning of the second month, and the mother had not nursed the infant for twenty-six days. The general condition of septicemia came on with great rapidity after the local manifestations began. In spite of energetic surgical treatment death soon occurred. The examination of the uterus showed that it was intact and took no part in the infection. Examination of the blood in one case showed the

presence of staphylococcus pyogenes aureus. It is known that the staphylococcus aureus is a habitual inhabitant of the milk ducts. Virulence of the pathogenic agent plays the most important rôle in such cases. Expression of the breast, which was done in these cases, is not to be recommended when there is a disease of the breasts that shows symptoms of having become generalized. Early, large incision, with prolonged drainage, is the best treatment.

Treatment of Mastitis with Bier's Suction.—P. Zacharias (*Münch. Med. Woch.*, April 9, 1907) has made use of the suction method of Bier in cases of mastitis treated at the Erlangen Hospital. The production of passive hyperemia through suction apparatus has a wide field in modern therapeutics. The suction hyperemia has the effect of inhibiting bacterial action in the tissues. In the last seven years, at the Erlangen clinic, there have been treated 2,214 labor cases, among which there have been 52 cases of mastitis, that is, 2.35 per cent. Among these cases 63 breasts were treated. Thirty were treated antiphlogistically; ten per cent. had to be incised. Thirty-three were treated by suction; only two were incised, that is, six per cent. The author believes that at the beginning of a case of mastitis this treatment is a sovereign remedy. Only failure in the technique, or beginning the treatment too late, will give unsatisfactory results. In cases which come to the clinic after abscess formation has taken place no benefit will be received. This method enables the mother to continue nursing her child, while under the old system it was necessary to stop nursing and on recovery the milk was gone from the breast. Under this treatment lactation is rather a benefit to the mother. If nursing gives pain the milk can be removed by suction and lactation begun at the end of the treatment. The best method of applying the treatment is to begin as soon as there is any rise of temperature, giving three suction daily of half an hour each. The child may nurse before the treatment, as otherwise the greater part of the milk is lost. After the temperature has fallen and inflammation disappeared suction is stopped, treatment being needed for two or three days at most. When by the third day the temperature has not fallen to normal we may expect abscess formation. Recurrence took place once, but yielded to application of the same treatment. The bell glasses should be large enough to entirely cover the gland and should not give any pain. In thin patients a little air may get under the bell, and this will give pain, so that some pressure may be needed to keep the bell in contact with the thorax. The bell must be filled gradually with air at the end of the treatment. The treatment should never be put into the patient's own hands to execute.

Diffuse Infectious Phlegmon of the Mammary Gland, End-

ing in Death of a Nursing Mother at the Sixth Month After Labor.—(*Lyon Méd.*, April 21, 1907) Planchu and André Rendu report a very rare case of infection of the mammary gland in a woman who had been normally nursing her child for six months. She was a remarkably healthy specimen and had well developed mammary glands and plenty of milk. The children that she was nursing were healthy and showed no signs of infection; the hospital service was new and an infectious case had never been treated there. Nevertheless an infection that was at first moderate went on progressively from bad to worse, and the patient died on the ninth day with all symptoms of general septicemia. The breast at first showed only the signs of a small amount of pus, removed under expression. It was not painful or tender at any stage of the case, and the incisions were made without anesthesia and without complaint of pain. The expression method has been used with success in the treatment of so many cases that it is impossible to think that it was the cause of the generalization of a local mammary infection. No bacteriological examinations were made.

History of an Epidemic of Puerperal Fever from Streptococci.—Gonnet (*Lyon Médical*, April 7, 1907) gives the history of an epidemic of puerperal fever occurring in the University Obstetrical Hospital. Although such epidemics are much less frequent than formerly and are of less severity, still they occur at the present day. The source of infection may be brought into the ward by any case that has been subjected to repeated examinations before admission, and the cause of the infection in the first case is believed by the author to be always the hand. The cause in general is the streptococcus pyogenes. The only means of putting an end to the epidemic is the prompt isolation of each victim as soon as the infection is discovered. The danger of contamination exists during the latent period of incubation, while many cases are insidious, accompanied by slight elevation of temperature and few uterine signs. The possibility of the early recognition of the streptococcus in the lochia is most important. As soon as a single streptococcus case has occurred in a ward a systematic examination of the lochia of each patient in the ward should be made daily. We must have a means of recognizing the streptococcus quickly in cultures, and the use of blood-agar gives us such a means. This means has been used in the hospital mentioned, where there are several confinements every day. Several other microorganisms have been found in the lochia, especially certain anaërobes. The epidemic began with the arrival of a patient whose membranes had been ruptured three days before entrance and who had submitted to many vaginal examinations. Delivery was nevertheless normal. Two days later there was a rise of temperature and pulse, and streptococci were found on the blood-agar. The case was promptly

isolated, but new ones began at once to occur among those delivered in the same room. There were ten cases in all, of which the author gives the histories. There were present other microorganisms, but of feeble pathogenic quality. When the anaërobes were present in numbers the temperature rise was moderate. In one half of the cases the culture contained only streptococci; in the others there were staphylococci. When there were few colonies, isolated, and easy to count there was a mild infection. The contagion is very rapid and easy; it is only necessary for the patient to remain a few hours in the same room with an infected woman to begin to show streptococci. It is propagated by the hands of the attendants, rarely directly from one patient to another. The persistence of the streptococcus in the genitals is very variable. Even after the temperature has fallen there may be streptococci in the discharges for a long time, and they are always dangerous. Streptococci of a latent type are frequent. Without any symptoms the germs are still present, and such cases are very dangerous to other patients. The examination of the blood is most important, the prognosis being fatal when the germs are found in it. The prophylactic measures and those necessary to stop the spread of the epidemic are early examination of the lochia of all suspects and isolation of all cases at once. As soon as the temperature reaches 38° C. the patient should be isolated.

Inflammatory Lesions of the Tubes and Pregnancy.—Louis Verdelet (*Gaz. Hebd. des Sci. Méd.*, May 12, 1907) describes a case of pelvic peritonitis with salpingitis and fixed uterus in which conservative treatment resulted in removal of all the exudates and a normal pregnancy and delivery followed. It is generally held that salpingitis prevents future pregnancies, and while sterility as a rule follows, this case shows that it is not invariably present. Pregnancy is possible both in the course of and after salpingitis. Abortion may be the result; but, as in this case, normal delivery may follow. Pregnancy, when it does occur, has a favorable effect in hastening the melting away of the inflammatory tissue following the peritonitis. Hence, a conservative treatment should be used whenever possible in such cases.

Prevention of Puerperal Fever.—Otto v. Herff (*Münch. Med. Woch.*, May 21, 1907) considers that physicians lay too much blame on midwives for the production and spreading of puerperal fever. The general practitioner is just as liable to be the carrier of infection by not using efficient disinfection of the hands before examination and operation. The disinfection of the hand must not be perfunctory, but must be thorough and will take some time. Therefore it is often neglected, and only a partial removal of germs from the skin takes place. In order to get perfect disinfection we must not make use of a slow and tedious

method, which goes through several processes and necessitates apparatus that is cumbersome to carry about. The shorter and simpler the method the better results we will get in the end. The author advocates the use of the hot water and alcohol method, since that gives a perfect result with only two processes to go through, and all the apparatus that is required is two basins, a brush, and some gauze. The use of rubber gloves has many disadvantages, and really requires an efficient disinfection of the hands before they are put on, since the gloves are apt to tear or to be cut by instruments, and they are almost impossible to put on over hands that are wet and unpowdered, and a tear spoils their usefulness. The danger of introduction of germs is increased by every unnecessary examination or operation, and the author believes that patience and conservatism will do away with many of the smaller operative procedures, such as forceps extractions. The author has made use of this method of disinfection in 6,000 cases of labor at the Basel Frauenklinik and has found it most efficient. His mortality from puerperal fever has been 0.08 per cent.

GYNECOLOGY AND ABDOMINAL SURGERY.

Endothelioma of the Ovary.—Channing W. Barrett (*Surg., Gyn., and Obst.*, May, 1907) presents a review of the eighty-four cases of this type recorded in the literature and adds a report of a case seen by himself. He says that less confusion will prevail if the endothelioma is considered a separate class of tumor. Such a classification has justification in the histogenesis, morphology, and arrangement of the cells. The tumor cannot be made to conform to the sarcoma or the carcinoma. Endothelioma should be divided into three varieties: lymphangio-endothelioma intravascular, hemangio-endothelioma intravascular, and hemangio-endothelioma perivascular, to correspond with their three origins. Endothelioma of the ovary has a high mortality if operation is delayed. Patients should be educated to seek earlier relief for pelvic conditions. On account of the tendency of the uterus to become involved and the growth to return in the opposite ovary, we should seriously consider the advisability of their removal at the time of removing a malignant tumor of the ovary.

Hemorrhage at the Beginning of Puberty.—J. Fischer (*Monat. f. Geburts. u. Gyn.*, April, 1907) describes two cases of severe hemorrhage in girls twelve and thirteen years of age, coming on near the beginning of menstruation. Only a curetting of the uterus had any effect in stopping the flow. In one of them there was undoubtedly a hemophilic condition, while the other patient had purpura hemorrhagica. Hemophilia is much more frequent in men than in women, but there are undoubted cases in which menstruation has caused severe hemorrhage in such sub-

jects. The periods begin generally at a very early age. The menses are very plentiful, irregular, and of long duration, and generally continue during pregnancy. Severe hemorrhages are frequent. Bleeding from other organs, such as the nose, mouth, and throat, and from skin and hemorrhoids, is common. Hemorrhages occur at puberty and the climacteric. The author found large coagula in the uterus, showing that the blood does not lose its coagulating power. Out of 5,000 obstetrical and gynecological cases the author has seen twelve of pronounced hemorrhages in girls from twelve to seventeen years of age. The amount and duration of the menses was great, hemorrhage lasting from twelve days to eight weeks. Locally, nothing that was abnormal was to be found by rectal examination. Hydrastis and ergotin were the best internal remedies and were successful in sixteen of the cases. Tumors of the uterus may cause hemorrhage. So may acute infections, heart lesions, kidney troubles, malaria, and chronic poisoning by lead and arsenic. There is a hemorrhagic form of chlorosis. Local deviations of the uterus, stenosis, masturbation, constipation, abuse of hot baths, standing, sewing on the machine, riding, and dancing may all cause hemorrhages in young girls.

Sclerosis of the Arteries of the Uterus as a Cause of Uncontrollable Hemorrhage.—A. Solowij (*Monatsschr. f. Geb. u. Gyn.*, March, 1907) says that most of the severe and uncontrollable hemorrhages of the uterus are due to inflammatory changes in the uterine mucous membrane, to circulatory derangements resulting from retroversion, and to new growths. When the uterus is not markedly enlarged, the position and adnexa are normal, and there is no tendency to hemophilia, we may seek for changes in the walls of the blood-vessels as a cause of hemorrhage. These alterations are not infrequent, yet cases that are so severe as to cause uncontrollable hemorrhages are somewhat rare. The author describes a case in which a patient who had had several normal labors and had been curetted for hemorrhages twice, submitted to the operation of total extirpation of the uterus before the uncontrollable bleeding could be stopped. The examination of the uterus that had been removed showed very marked changes in the walls of the blood-vessels, as well as in the muscular structure of the organ. The muscular fibers were atrophied and replaced by connective tissue. The changes were for the most part in the middle coats of the arteries, whose walls were much thickened. The mucous membrane was not much changed. There are two forms of sclerotic change in the arteries of the uterus: first, the senile, which results in extravasation of blood into the mucous membrane and the walls of the uterus, but with no hemorrhages into the cavity of the organ. The alteration of the arteries is confined to the intima, the lumen of the vessel being contracted or obliterated. The other form

occurs in younger women near the climacteric. The changes are in the media, the lumen of the arteries is not diminished, but often increased, and the symptom of note is uncontrollable hemorrhage into the cavity in severe cases. Senile sclerosis gives no symptoms during life, and is generally recognized on the post-mortem table. The other form is generally combined with chronic metritis. Metritis occurs in two forms, hyperplastic, due to chronic congestion, and inflammatory, due to infection of the endometrium. The results of both forms is the same, *i.e.* increase in the size of the uterus, increase in the connective tissue of the organ, especially about the blood-vessels, and atrophy of the musculature. The impulse to increase in connective tissue arises either outside the vessels in the uterine parenchyma, or in inflammatory changes in the vessels themselves. Chronic metritis always causes sclerosis of the arteries. Diagnosis is made by exclusion. The contractile elements of the vessels and of the uterine walls no longer act and bleeding results. Treatment is unsatisfactory, ergot becomes useless, as well as hot douches, as soon as the vasomotor elements lose their power. Rest in bed and regulation of the bowels may help by lessening congestion of the uterus. Curetting may aid at first, but a time comes when removal of the organ will be the only means of saving life.

Carcinoma of the Superficial Mucous Membrane of the Uterine Cavity.—Walther Schauenstein (*Gyn., Rund. H.* 5, 1907) tells us that pure carcinomata of flattened epithelium may involve the mucous membrane of the uterine cavity or of the cervix. Such carcinomata may spread over the lining of the body as secondary growths. Hence we must divide the carcinomata of flattened epithelium into two groups: first, primary growths; second, secondary growths which have spread from a primary carcinoma of the cervix. This classification is made as a result of examinations of the cell elements of the growths, as well as of the clinical symptoms present. In one case cited by the writer he made examinations of the entire body of the uterus seriatim, and found that there had been no involvement of the cervix at all. The changes in the mucous membrane were of two kinds. There had been a chronic purulent endometritis, which resulted in small-celled infiltration of the mucous membrane, and a true pyogenic membrane was formed. Afterwards the entire lining was destroyed in some places and the characteristics of cylindrical epithelium were lost. A growth took place of canceroid pearls having the characteristics of flattened epithelium, and a typical horny epithelioma was formed. Hence the author believes it to have been a primary canceroid of the uterine body. There were three areas of growth separated from one another, and several smaller ones at other points of the lining, due to the implantation of particles of cancerous material separated from the larger areas.

Suppuration of Fibromata of the Uterus.—Jacques Delage and E. Gaujoux (*Gaz. des Hôp.*, April 30, 1907) describe suppuration of fibromata of the uterus as extremely rare. It is difficult to recognize, coming on insidiously and having no tendency to spontaneous cure. Unless operation is done it ends in death. The authors describe two cases observed by them. It occurs about once in one hundred cases of fibroma when primary and not the result of gangrene or sphacelus. Neither of the patients observed presented any genital source of infection. In one, pregnancy was the cause, and in the other several punctures of the abdomen had been made for ascites. The predisposing causes are those that interfere with the nutrition of the tumor, as when the pedicle becomes twisted, or the circulation is cut off by adhesions or by compression. Labor is a frequent cause. The immediate cause is always the introduction in some manner of infection, either vaginouterine or extrauterine. The infectious agent may be carried by the blood or lymph vessels. The suppuration begins from without, involving first the fibromuscular tissues around the tumor. The fever of such suppurations is generally moderate and regular. Loss of appetite and of flesh and general failure indicate the suppuration and speak for immediate intervention. The only hope outside of operation is of the abscess opening into the intestine or the vagina. Operation should be done as soon as the diagnosis is made.

Nomenclature of Endometritis.—The committee on this subject, E. F. Tucker, H. O. Marcy, and John G. Clark (*Jour. Amer. Med. Assn.*, March 23, 1907), report to the Section on Obstetrics and Gynecology of the American Medical Association that the classification of endometritis should be simply as acute and chronic. The chronic form may further be divided into glandular and interstitial, when the glands on the one hand or the stroma on the other are especially involved. Pathologists may subdivide the chronic forms in order to indicate anatomic peculiarities, but this is not necessary for the clinician. Classifications based upon etiological factors, clinical symptoms and age are faulty.

Dysmenorrhea in Abnormal Pelvic Conditions.—G. R. Holden (*Surg., Gyn., and Obst.*, May, 1907) has analyzed 1,000 consecutive cases in the gynecological wards of the Johns Hopkins Hospital, omitting those in which menstruation had ceased or had not begun, also all rectal, renal, and ureteral cases. He finds that dysmenorrhea is present in 47 per cent. of all gynecological hospital patients. In about 23 per cent. of the entire number, it seems to be definitely caused by certain abnormal conditions of the pelvic organs. In 22 per cent. of the entire number it is present in conjunction with such conditions, but is apparently not caused by them. The pathological conditions which are most frequently seen as the causes of dysmenorrhea are: 1. Retrodisplacements of the uterus; 2. Pelvic inflammatory

disease; 3. Myomata. These three conditions account for nearly 90 per cent. of all the dysmenorrhea which is caused by pathological conditions of the pelvic organs. Retrodisplacement accounts for 41 per cent., pelvic inflammatory disease for 37 per cent., and myomata for 11 per cent. Of nulliparous patients with retrodisplacements causing symptoms, 86 per cent. have dysmenorrhea. The frequency of association leads us to conclude that the abnormal position causes the dysmenorrhea. In the retrodisplacements occurring after child-birth it is much less common; 25 per cent. of multiparæ with retrodisplacements have dysmenorrhea, which is apparently caused by the malposition. Of all the cases of pelvic inflammatory disease, 31 per cent. have dysmenorrhea which is apparently caused by the condition. Of all the cases of myoma, 20 per cent. have dysmenorrhea apparently caused by the tumor.

DISEASES OF CHILDREN.

Hysteria in Children.—Contrary to the views of most authors, who hold that hysteria is not a disease of childhood, though it is occasionally seen during that period, D'Orsay Hecht (*Jour. Amer. Med. Assn.*, Feb. 23, 1907) holds that it occurs frequently at that time of life. Heredity is the great predisposing cause, though hysterical parents often have hysterical children on account of the child's aptitude for imitating the peculiarities and habits of others, this becoming a subconscious process when long exercised. The affection will rarely be recognized in children if one waits for all the stigmata and symptoms seen in adults. Juvenile hysteria is chiefly monosymptomatic, a localized paralysis being often the only physical finding or possibly associated with one other symptom. The paralyzes of hysteria differ from those of organic disease in manner of distribution, character of onset, and duration. Monoplegias and paraplegias are frequent and hemiplegia occurs, but always without involvement of the face. Paralysis of a single limb usually appears with great suddenness, is characterized by flaccidity, normal tendon reflexes, and in long-standing cases by slight atrophy of disuse. The extent and degree of paralysis change rapidly for better or worse. Associated with prolonged paralyzes are contractures of functional type, marked in degree, relaxing only in deep sleep or narcosis and tender. Sensory disturbances are rarely noted in children and when present they are almost always of the hyperæsthetic variety. Hemianesthesias are practically unknown and occur only in older children. When an anesthetic zone, suggested or otherwise, is found, it is the same unanatomic, sharply demarcated, rapidly shifting area seen in hysterical adults. Hysterical motor agitation in children is expressed in the form of choreic movements, facial habit spasms, convulsive tics and epileptoid seizures. Other common phenomena in child hysteria are aphonia, mutism, stam-

mering, and blepharospasm. The writer describes five cases of hysteria in childhood which he has recently observed. The greatest difficulty in diagnosis lies not so much in mistaking organic disease for hysteria and vice versa as in failing to appreciate that organic disease is frequently complicated with hysteria. It is well to note the disproportion between cause and effect. Slight cause and grave consequence should arouse a suspicion of hysteria. As regards treatment, several methods may be employed. The so-called "method of surprise" aims to emancipate the child from a deep-rooted obsession quickly and completely, without giving it time to reflect and deliberate. The "method of disregard" implies apparent absolute indifference of all attendants toward all symptoms, while they are really carefully observed. Absolute isolation is also sometimes effectual. In addition to the above methods, diet, massage, electricity, and hydrotherapy are of value, particularly the last two, which are usually unpleasant and so successful.

Meningism.—Chevalier Jackson (*Jour. Amer. Med. Assn.*, Mar. 30, 1907) defines meningism as a morbid state characterized by a meningitic syndrome without intracranial inflammation. Before recovery such cases are often indistinguishable from meningitis. According to etiology, these cases may be classified as either reflex, toxemic, or irritative. In all three classes there are circulatory changes, and in many cases direct action on the cortical and subcortical cells. In the toxemic cases the nosotoxins circulating in the blood act as toxic doses of cerebral poisonous drugs do. When irritative and toxemic forms occur accidentally in a case with middle-ear disease, correct diagnosis becomes of the utmost importance. Any meningitic symptom may occur, but the erethistic are much more frequent than the depressive. The full development of pressure symptoms or paralysis will usually exclude meningism. The readiness with which the symptoms of meningism may be quieted by small doses of morphine is a valuable diagnostic point. These cases of meningism are distinct from Quincke's "serous meningitis"; in that there is no serous trouble. In the course of middle-ear disease the symptoms of meningism often demand radical operation for cure, even if the mastoid be yet uninvolved.

Cysts of the Omentum.—Rufus E. Fort (*Ann. of Surg.*, Mar., 1907) records a case of this unusual affection. The patient, a female child two and a half years old, gave no history of previous illness except two attacks of acute indigestion. Abdominal enlargement had been noticed for eighteen months. There were no symptoms except dyspnea on exertion. The abdomen was greatly distended, with prominent veins, and dullness, fluctuation, and fluid wave over the entire abdomen. Five pints of dark bloody fluid were removed by aspiration. A few days later the

abdomen was opened and a dark, glistening tumor was excised. It was a collection of fluid in the greater omentum, without a distinct capsule. There were no adhesions. Recovery was completed within two weeks. The fluid had a specific gravity of 1.007 and contained albumin and many degenerated blood cells. The writer has collected twenty-one cases besides his own. These have impressed him with the impossibility of diagnosis without exploration. The condition is seen most often in young children, 50 per cent. under ten years, 65 per cent. under twenty, which leads to a belief that it is of congenital origin. Seventy-five per cent. of the cases are females. There are no characteristic symptoms, the picture being that common to cystic abdominal growths. The points which have been mentioned as pathognomonic of omental tumor are: Superficial location, abnormal passive mobility with downward limitations, absence of functional disturbance, and little or no change in position during respiration. Absolute dullness over the entire tumor shows it to be anterior to the hollow viscera. Lipoma is the only solid tumor with which it may be confused, as this may give fluctuation. Pancreatic tumors are usually malignant, productive of constant pain, usually produce icterus, fatty stools, and rarely occur before middle life, and, as a rule, coils of the intestine yielding a tympanitic note may be found over the tumor. Cyst of the urachus, if seen early, may show its lower origin and its mobility less marked and the same in all directions. In cyst of the mesentery we usually have a coil of intestine anterior. Ovarian cyst in its earlier stages may be differentiated by pelvic examination and by the physical signs, showing that the tumor springs from the lower zone of the abdomen.

Asthma in Infants and Children.—It is almost certain, says Edmund Cautley (*Clin. Jour.*, Feb. 27, 1907) that in every case there is a neurotic element. Gout also appears to be a strong predisposing factor. The exciting causes may be central or reflex. All affections which produce catarrh of the respiratory tract may lead to asthma. The first attack often dates from an attack of bronchitis or bronchopneumonia, especially when secondary to whooping-cough or measles. When there is morbid hypersensitiveness or a catarrhal condition of the respiratory mucosa a slight cause may bring on a paroxysm by reflex stimulation of the vagus. Among these causes are wind, pollen of plants, various dusts and odors, digestive disturbance, constipation, affections of the nose and nasopharynx, and foreign bodies in various orifices. Cases have been cured by removal of some nasal obstruction, such as hypertrophied turbinates, deflected septum, polypus, and adenoids. On the other hand, nasal obstructions and adenoids are very common apart from asthmatic attacks, and true asthma sometimes follows the removal of a nasal polypus or the cure of nasal obstruction. An unhealthy state of the nasal mucosa, especially edema of a small area of the upper part of the triangular cartilage, opposite and imme-

diately above the level of the anterior third of the middle turbinal bone, has been blamed. Cauterization of this area has relieved or cured some cases, even when it has appeared perfectly healthy. It may also cure paroxysmal sneezing. There is very little evidence of central stimulation as an exciting cause, but attacks are occasionally produced by emotion. Poisons, such as carbonic acid and those of uremia, are known to induce dyspnea, and act directly on the respiratory center in the medulla. It is probable that some cases of asthma are due to muscular spasm alone, and that in others, in young infants especially, muscular spasm is secondary to swelling of the mucous membrane. Concerning the diagnosis the writer says that stress must be laid on the more or less sudden onset, the presence of dyspnea out of all proportion to the physical signs, the absence of fever, the recurrence of paroxysms, and an appropriate family history. Care must be taken to exclude those varieties of dyspnea due to cardiac and renal disease; due to the pressure of a retroesophageal abscess, an enlarged thymus, or of bronchial glands; and the dyspnea that results from laryngeal affections and foreign bodies in the air passages. An important feature of asthma is the expiratory nature of the dyspnea, whereas in laryngeal obstructions the dyspnea is inspiratory. Hysterical dyspnea may be paroxysmal, but is not accompanied by any distress. As a general principle it is infinitely more important to attend to the general health of the child, to prevent erroneous methods of feeding, to remove local sources of irritation, and to cure the catarrhal tendency, than it is to rely upon measures for relieving or cutting short the paroxysms.

ERRATA.

In July issue, line 20, page 90, should read: *Sixth*, if he became tympanitic, he would ask that 1/50 gr. hyoscin hydrobromate be given, etc.

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ORIGINAL COMMUNICATIONS.

TREATMENT OF TUBERCULAR AND NONTUBERCULAR CYSTITIS IN THE FEMALE.*

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(With eleven illustrations.)

PRIMARY tuberculosis of the bladder in the female is doubtful, and it has been claimed that there are no instances in which it has been positively determined by autopsy that the lesion in the bladder was primary. Secondary tuberculosis, however, the infection reaching the bladder from the kidney above, is by no means uncommon. It is impracticable, in discussing the treatment of bladder tuberculosis not to take into account the lesions above the bladder. It is also impracticable to discuss the treatment of vesical tuberculosis in the female side by side with that in the male. The disease seldom originates in the male bladder, and it has been found that in most of the cases of tuberculosis of the bladder in the male the lesion is secondary to disease of adjoining parts of the urinary tract, the testicles, prostate, and seminal vesicles. If one discusses the treatment of male vesical tuberculosis without at the same time taking into consideration the

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treatment of other coexisting lesions, one cannot arrive at any definite conclusion. It is therefore illogical to discuss the treatment of male cases with those occurring in the female, and the statistics, of which there are many, bearing on the "treatment of vesical tuberculosis," in which the disease is discussed as an entity in both male and female, can only give a confused idea of the real therapeutic value of any given measure.

The treatment of vesical tuberculosis in the female gives better results than in the male. In the female, local treatment is more satisfactory because one can watch the progress of the case through the cystoscope, and one is not in the dark as to the progress of the deeper foci of the disease.

Tuberculosis of the urinary tract is a most desperate disease. It taxes the patient and the physician to the utmost. The fact that it is usually secondary to the disease in some other part of the body makes it still more serious and difficult to treat. Relapses from states of temporary improvement, even after months, if not years, of treatment, are very apt to occur, and may bring back the patient to the same condition of suffering. Much thought has been expended in devising new methods of treatment for this disease, and much has been accomplished. Many disappointments have arisen, many patients have relapsed; but the satisfaction, finally, after untiring patience, of seeing a bladder tuberculosis clear up and leave the patient in a condition of comfort more than repays for the effort expended. Even if the patient has been only relieved, much has been gained.

The subject of treatment may be divided as follows: (1) The treatment of primary vesical tuberculosis; (2) the treatment of secondary vesical tuberculosis.

It is a question, as already stated, if tuberculosis is really ever actually primary in the bladder in the strict sense of the word, and there are many who think that it is always secondary to some other lesion situated elsewhere in the body, which serves as a primary focus. Clinically, however, there are many cases in which the bladder lesion is the only important one, and to all intents and purposes in these cases it is the only one of moment. In what follows the word "primary" means primary with reference to the urinary tract.

Vesical tuberculosis assumes two forms, the miliary form, and the ulcerative form. We will first discuss the treatment of the miliary form. The first evidence of the disease is seen, on cysto-

scopic examination, to be numbers of small red patches, in which the tubercles are later to appear. The disease does not, as has been erroneously supposed, first manifest itself by the formation of visible tubercles. Intense inflammatory reaction results, which is succeeded by a gradual breaking down of the tubercles, and secondary ulceration. A good deal may be accomplished during this primary stage by intelligent treatment. The lesions are not deep as a rule. There are many who believe that nothing should be done in this stage, except to advise the patient to move to some suitable climate, where she can have the benefit of intelligent medical supervision. Rest, fresh air, proper food, and obedience to rules of hygiene, are essential. Some cures have been reported, the most notable of which are those of Desnos (*Bul. de Thérap.*, 1898, Vol. 135, p. 127), who reports four remarkable cases in which there was a most satisfactory result. Unfortunately this method of treatment is not within the range of all, and cannot be carried out except by those in a position of some affluence. Those who are obliged to stay at home, especially those who are obliged to earn their own living, as is often the case, must be treated in some less expensive way.

Drugs taken internally are sometimes adjuvants, and chief among these drugs is creosote, which has been largely employed. Its effect in pulmonary tuberculosis is sometimes remarkable. Fenwick (*Ulceration of the Bladder*, London, 1900, p. 44) recommends most strongly sandalwood oil, at the outset of the disease, the patient taking it for about fourteen days. Fenwick believes that it reduces inflammatory swelling. For violent pain, Steindler (*Wien. Med. Blät.*, 1899, Vol. 22, p. 207) speaks highly of antipyrin injected into the rectum. Morphia should be avoided if it is possible to do so. The patient who has to stay in the city should be given directions as to a simple mode of life, special insistence to be laid upon the need of plenty of fresh air, proper food, and ordinary hygienic rules. While it is proper to have the urine as bland as possible, yet in order to effect this it is not best to order too large amounts of milk and water, because an excess of ingested fluid means so many more urinations.

Many years ago it was thought that with the introduction of Koch's lymph we had a remedy with which to combat this disease. Unfortunately the first efforts in this direction were not wholly satisfactory; nevertheless, enough was accomplished, even at that time, to show that further investigation was warranted.

Fenwick and Wright were among those who thought it worth while to give the remedy a further trial. Fenwick (*Ulceration of the Bladder*, London, 1900, p. 34) advised it in all cases of primary vesical tuberculosis, and he relates a case (*loc. cit.* p. 45) in a male thirty-two years old, in which the use of this remedy was followed by a cure. Fenwick used large doses of the lymph. His method of treatment was to inject the tuberculin, beginning with $1/250$ mg., giving the patient a course of six injections of increasing strength ($1/250$, $1/200$, $1/150$, $1/100$, $1/50$, to 1 mg.). This surgeon was fair in his estimate of the method as it was then used, and in another article (*Lancet*, 1904, Vol. 1, p. 935) he distinctly disclaimed that the remedy was a cure in all cases, and he furthermore advised against its use when the kidney was affected, believing that there was some danger of lighting up a latent affection. Schroeder (*Zeit. f. Geburt. und Gynäk.*, 1899, No. 40, p. 1) reported the case of a female thirty-nine years old, who had $1/500$ of a milligram of the tuberculin given every three or four days. He proceeded with caution, omitting the treatment when there was much reaction. The patient was greatly improved, but subsequently relapsed.

Wright (*Lancet*, 1905, Vol. 2, p. 1676) advanced a step further in the treatment by this method when he urged *small* doses of the lymph. He has treated a number of cases, using doses as small as $1/800$ of a milligram at ten days' intervals. He relates a case in which the opsonic index stood at .62 before treatment. At first the patient was given $1/100$ of a mg. at intervals of ten days, advancing to $1/50$ of a mg., without result. The dose was then reduced to $1/800$ mg. at ten days' intervals; immediate improvement followed, and there was freedom from pain. Another patient (*loc. cit.* p. 1677), forty-five years of age, had the same treatment, and gained fourteen pounds in weight. Wright (*loc. cit.* p. 1677) is guided as to the strength of the dose by the condition of the patient after injection. In another case, that of an adult female, the dose was reduced to $1/2400$ mg. before improvement followed.

These results obtained by Wright have led to some discussion, but it is generally admitted by those who have had some experience with it, among whom may be mentioned Cheyne (*Lancet*, 1906, Vol. 1, p. 80), that Wright's investigation demands further inquiry, and that, furthermore, the use of the lymph, if not a cure, is certainly a very great adjuvant. Judging

from the effects of tuberculin in primary tuberculosis in other parts of the body, notably in bones, it would seem that this method demands further experiment.

When the tubercles have begun to break down and to form ulcers, it is time to employ local measures, but not before. No possible good can come from injections and topical applications before the ulcer has formed, because the bacilli are still within the tissues in the submucous spaces, and they cannot be reached by local treatment.

The use of corrosive sublimate was first brought forward by Guyon. The treatment consists in instillations of a solution of the drug every day, or if not daily, as often as the patient can support it. A solution of 1/5000 or 1/10,000 is first tried, thirty or forty drops being slowly instilled into the bladder by means of a dropper or pipette. As toleration for the drug is attained, the strength may be increased up to 1/1000 or 1/500. After the first few treatments by the physician, the patient may be instructed to make the applications herself. If the pain is intolerable a solution of cocaine or eucaine may be injected into the bladder before the corrosive sublimate is used. The treatment has to be kept up for months before any decided improvement is noticed. Above all, patience and perseverance are essential.

The perusal of the literature on the subject of urinary tuberculosis shows that the treatment by the use of this drug, while it has not given numerous cures, has given an enormous amount of relief, and when other treatment is impossible it should always be tried.

The writer (*Jour. Am. Med. Ass.*, 1906, Vol. 47, p. 1440) has had five cases in which he has used this treatment, which are analyzed as follows: In one (Case 2) there was a tubercular kidney treated by nephrotomy, and in this case the Guyon treatment after the nephrotomy gave such relief that the patient was rendered most comfortable; in another (Case 11) a patient with vesical tuberculosis was made most comfortable by suprapubic cystotomy combined with this treatment, and was rendered much more comfortable, in fact, almost well. In another (Case 12) primary vesical tuberculosis was cured; in another (Case 18) a nephrectomy, followed by a vesicovaginal fistula, a cure was effected after some years; in another (Case 9), a primary vesical tuberculosis, in a working girl, which was treated by vaginal cystotomy, followed by the Guyon treatment, was entirely cured.

A cure of primary vesical tuberculosis with beginning tubercular ureteritis has been reported by Kreisel (*Am. Jour. Urol.*, 1906, Vol. 2, p. 393). The patient was eighteen years old, and the diagnosis was confirmed by the guinea-pig test. The patient was cured by bladder and ureteral instillations of guaiacol alternating with corrosive sublimate. She recovered completely.

Various other drugs have been employed in the treatment of this disease. At one time emulsion of iodoform and olive oil was extensively used, and it was thought that a positive remedy had been discovered for the cure of the disease. Cases of absolute cure, however, are very rare. Jamin (*Jour. de Méd. de Paris*, 1898, 2 s., No. 10, p. 579) reported such a case in a female twenty-eight years old. The drug is useful in allaying the symptoms in those cases in which the corrosive sublimate cannot be used, but it has little curative action. Luys (*La Clinique, Paris*, 1906, Vol. 1, p. 645) recommends instillations of iodoform and guaiacol in vaseline oil in the following proportions: Iodoform, 1 gram; guaiacol, 5 grams; vaseline oil, 100 grams; instillations of 5 c.c. a day. Luys advises that the bladder should not be washed out before these injections, and the patient is directed to hold the urine as long as possible, and not to let it all out when she has to urinate. Pyrogallic acid, lactic acid, and carbolic acid have also been used in the same way. Carbolic acid particularly has been recommended by Rovsing (*Abstr. Jour. Am. Med. Ass.*, 1906, Vol. 47, p. 903), who reported thirteen cures from its use. Rovsing injects 50 c.c. of a 6 per cent. solution, which has previously been warmed. The fluid is retained for three or four minutes and flows out milky; the process is repeated until it comes back clear. The bladder is not rinsed out subsequently. Morphia by rectum has to be given to control the pain. The treatment is repeated every second day, and later, at longer intervals. As carbolic acid of this strength kills germs in a test tube within a short while, the treatment seems rational. Motz (*Ass. Franç. d'Urol.*, 1898, 3 ses., p. 342) has reported a cure from the use of creosote and oil instillations combined with drainage through the urethra, in a girl fifteen years old.

If there is an ulcer of considerable size in the bladder, topical applications of silver nitrate will often stimulate healing. It is best applied by fusing the crystals onto the end of a small probe, and the application can be neatly and accurately made through a small cystoscope, with the patient in the knee-chest position. An

injection of cocaine previous to the application makes the pain bearable. These applications should be made every week or two. It is astonishing how quickly reparative changes take place under this treatment. The author has many times seen ulcers disappear in this way. Curettage of an ulcer is not to be recommended unless there are granulations.

If the case does not yield to treatment, something further will have to be done, and cystotomy is the best remedy. The bladder is at once put at rest; the patient is able to sleep at night; reparative processes take place, provided, of course, the patient is willing to expend a sufficient amount of time and care to keep the parts clean. It is the writer's belief that more early cases should be treated by cystotomy than has been done in the past. A patient who is obliged to earn her own living and to live at home cannot lose her sleep and be ready for the labors of the day, and she demands relief. Cystotomy, however, must not be done in those cases in which there is a lesion of the urinary tract above the bladder. In these cases the kidney must always be first attacked; if cystotomy is done, and the kidney not treated, there is, of course, no prospect of cure. One of the writer's cases (*Jour. Am. Med. Ass.*, 1906, Vol. 47, p. 1440, Case 9) illustrates this method of treatment very well. The patient, twenty-eight years old, was referred by Dr. James M. Jackson of Boston. She had had severe vesical symptoms for five months. There was primary vesical tuberculosis with miliary tubercles and one large ulcer near the left ureteral orifice; the guinea-pig test was positive. After trying various methods of treatment without relief, a vaginal cystotomy was done, April 2, 1904. For two years following this operation the patient took two copious vesical irrigations of boric acid daily, and gave herself the corrosive sublimate treatment at home. Besides this, she came to have applications of nitrate of silver, which were applied about once a week for a considerable length of time. At the end of two years the urine was free from pus, and the bladder looked healthy. The fistula was closed in May, 1906, and the patient has been perfectly well ever since. She had a contracted bladder following the treatment, and this was dilated until the bladder held 200 c.c., when it was found that it could not be enlarged beyond this capacity.

The writer wishes to emphasize the importance of after-treatment when cystotomy has been done. There is a great tempta-

tion on the part of the patient, in view of the great relief experienced, especially if a portable urinal collects all the urine as it drips from the vagina, to disregard the after-treatment and to relapse into a condition of indifference. Such a case will not get well. Secondary infection is almost certain to occur, complicating and consequently prolonging the disease, and an incurable condition is likely to ensue.

Suprapubic cystotomy should never be done in the female unless it is desired to resect a portion of the bladder. It will not be demanded for excision of the mucous membrane itself, for it has been shown by Walker (*Ann. of Surgery*, 1907, Vol. 45, p. 601) that excision of the mucous membrane is not a suitable operation. Walker reports thirteen cases in which this was done, with the following results: Two died from the operation, eight died later, two were improved, and one was not improved.

Ulcerative tuberculosis of the bladder sometimes takes the form of a solitary ulcer. Fenwick (*Ulceration of the Bladder*, London, 1900, p. 11) has called particular attention to this form of the disease. He believes that a simple ulcer of the bladder, analogous to simple ulcer of the stomach, has a decided tendency to tubercular change. Fenwick is in doubt as to whether the disease is originally simple nontubercular ulcer, or whether there is not a torpid chronic tuberculosis manifesting itself by ulcerative change. There seems to be some ground for Fenwick's opinion, because these changes do not seem to be as virulent as those in which the ulcer has resulted from an evident primary miliary tuberculosis. Fenwick's (*Ulceration of the Bladder*, London, 1900, p. 46) method of treatment is Koch's tuberculin to begin with, and, later, cystotomy, with thorough application of iodoform. If the ulcer is very accessible it might be well to resect that portion of the bladder affected by the lesion. Polak (*Am. Gynecological and Obstetrical Jour.*, 1897, Vol. 10, p. 41) has reported a solitary ulcer of the bladder in a female, twenty years old, which was treated by curetting, drainage through the urethra with gauze for four days, and later, applications of nitrate of silver, 80 grains to the ounce, every four days. This treatment was followed by a complete cure.

The writer does not wish to give the impression that cases of primary vesical tuberculosis are very amenable to treatment. On the contrary, it is a most intractable disease, and at the present time there are but few instances reported of authentic cures.

We will now discuss the treatment of vesical tuberculosis in which the disease in the bladder is secondary from the kidney above. The subject may be divided into two headings—the treatment of the bladder in those cases in which nephrectomy is not advisable, and treatment after nephrectomy has been performed.

It is inadvisable to do a nephrectomy in cases in which there is urgent contraindication, for instance, a serious heart disease, and extensive lesions in other parts of the body, tubercular or nontubercular. The danger that the remaining sound kidney may be infected by the tubercular process in the bladder has, it seems to the writer, been much exaggerated. In one of the writer's cases tuberculosis was known to have existed in the bladder for at least five years, and probably much longer, and yet the remaining sound kidney was not affected. If urgent relief is demanded there is nothing better than an infrapubic cystotomy, and if it is evident that the patient has not much longer to live this will decidedly be the best line of procedure. This, however, is not always necessary, and other methods of treatment may give equally good results. In one of the writer's cases (*Jour. Am. Med. Ass.*, 1906, Vol. 47, Case 2), that of a female, thirty years of age, with tuberculous left kidney, the patient's condition precluding nephrectomy, the persistent use of instillations of corrosive sublimate for some months, together with applications of silver to the ulcers in the bladder, brought about a condition of great relief, so that she passed her water without pain only seven or eight times a day, and once or twice at night. The kidney had been previously incised and drained to let out the pus, and had diminished in size and was discharging but little pus into the bladder.

It would seem that injections of Koch's new tuberculin may accomplish a great deal of good in these cases. Wright (*Lancet*, 1905, Vol. 2, p. 1676) relates the following three cases as examples of this method of treatment: The first was that of a female adult, with tubercular cystitis and tubercular disease of the kidney, which had lasted for two years. One kidney had been removed, but there was evidence of disease in the other. Tubercle bacilli, the proteus, and other contaminating bacteria were found, and the patient's tuberculo-opsonic index was .75 and .35 on two tests. After the first inoculation the index rose to 1.7 and continued at this height for the next few days. After six months' treatment the bacilli had entirely disappeared from

the urine. Then the proteus vaccine was used, which caused this bacillus to disappear. The patient got so well that she contemplated marriage, but unfortunately there was a relapse, which was apparently due to the proteus. Inoculations were begun again, and at the time of the report the proteus was once more disappearing. The second case was that of a female of good physique, with cystitis. Tubercle bacilli were found in the urine. The index was .85 and on two subsequent occasions it was .9 and .93 respectively. An inoculation of 1/800 mg. of tuberculin was given, but this dose was excessive, and the patient was made worse. Then 1/2400 mg. was given, and improvement followed. Micturition was soon decreased, and at the time of the report the index was 1.6. The third case reported by Wright was that of a female, forty-three years old, with a large ulcer of the bladder, and tubercle bacilli in the urine. Both kidneys were large and tender, especially the left one. Injections of tuberculin were begun in April, 1903. The patient gained sixteen pounds in three months. The tubercle bacilli gradually diminished, and at the end of six weeks disappeared. Later tubercle bacilli reappeared, and on further inoculation disappeared again. At the time of the report she was much better, but there was incontinence of urine. Rosenfeld (*Ann. des Mal. des Org. G. U.*, Paris, 1905, Vol. 23, p. 234) likewise reports a case in a male with tubercular right kidney and tuberculosis of both testicles. Tubercle bacilli were found in the urine. After six weeks of treatment with Koch's new tuberculin the fever fell, the urine became clear, and the bacilli disappeared. Coincidentally with this improvement the swelling of the prostate and epididymis diminished to a marked degree. The treatment was carried on for only four months. The value of this case lies in the fact that there was a late report. Three years later the patient was quite well, the urine having been clear all this time.

The treatment of the bladder after nephrectomy has been performed is of the greatest importance. There is a mistaken opinion that once the kidney has been removed the bladder rapidly clears up and gets well. This is not so, and if one follows a number of nephrectomies in which there is an associated bladder lesion he will convince himself that this is far from the truth. At the same time it must be said that many bladders apparently get well of themselves after nephrectomy. In these cases the suspicion must exist that the bladder was not tubercular at all, and that there was some other form of infection.

The same painstaking care is necessary in the treatment of these bladders as in the case of primary tuberculosis of the viscus. The same patience and perseverance are essential, and in some instances it may be months, if not years, before a final cure is attained. A great mistake has been made in urging treatment too rapidly in these cases. It is far better to proceed slowly and not to resort to any harsh method of treatment which will aggravate the disease and make it worse. Curetting should never be done unless there are granulations. It does no good to curette tubercles; it simply disseminates the disease. Desnos (*Congr. de l'Etude de la Tuberculose*, Paris, 1898, Vol. 4, p. 864), after curetting a bladder through a suprapubic wound, found that there was rapid dissemination of the disease. In one case the whole bladder and space of Retzius were filled with tubercular granulations. If a patient who has just had nephrectomy performed can have the benefit of a change of climate, this is by far the best method to begin with. She may live in a suitable sanatorium for a number of months and will probably experience great relief. Those patients who cannot have the benefit of this form of treatment must be taken care of in another way. The writer believes that treatment with corrosive sublimate is by far the best at the present time. With this, injections of Koch's lymph may be given. Nitrate of silver may be employed in conjunction with the corrosive treatment. Nitrate of silver, in the writer's experience, has proved to be of the greatest value in the treatment of these post-operative cases. If the bladder is extensively diseased, covered with ulcers, and universally affected, the greatest good will be obtained by etherizing the patient, and thoroughly cauterizing the whole surface of the bladder with the solid nitrate of silver stick. There is no danger of cauterizing too deeply, for the burn resulting from the application of the silver is not deep. Morphine subcutaneously or by rectum controls the pain, which lasts only a few hours. In three instances in which this method of treatment was employed, two post-operative cases, and one in which nephrectomy was inadvisable, the greatest possible relief resulted, the number of urinations diminishing, and the pain on urination becoming much less severe. In all these cases the subsequent treatment consisted in further occasional applications of silver nitrate through the cystoscope, as well as continued treatment with corrosive sublimate.

If, in spite of all treatment, the patient cannot stand the suf-

fering caused by the disease, it may be necessary to make a vesicovaginal fistula. Subsequently the Guyon treatment with the nitrate of silver may be continued. After some progress has been made, and there is evidence that the process is coming to an end, the Guyon treatment may be replaced by injections of ichthyol and glycerine, half of each. This is a very soothing application, is well borne, and is especially useful in these cases.

In cases of extensive ulcerations which are accessible, resection has been employed with considerable success. Hunner (*Johns Hopkins Hospital Bulletin*, 1904, Vol. 15, pp. 15, 16, 17) has reported four cases, one of his own and three of Kelly's, in which this method of treatment was employed, the operation being done at the time that the nephrectomy was performed; in one instance through a transperitoneal suprapubic incision, and in the remaining three cases through a lateral incision used for removing the ureter. In three of these cases cure followed, and the remaining one was improved. Hunner (*Am. Med.*, 1901, Vol. 7, p. 706) advises doing an infravaginal cystotomy for drainage in case it has been necessary to enter the peritoneal cavity. Otherwise there is some danger that the bladder stitches may give way and cause death from peritonitis. This result ensued in one of Kelly's (*New York State Med. Jour.*, 1906, Vol. 6, p. 145) two weeks after an intraperitoneal resection of the bladder. Kelly (*Can. Jour. of Med. and Surg.*, 1906, Vol. 19, p. 81) has reported a case of a female, thirty-four years old, with extensively ulcerated bladder, in which he removed the kidney and, through a suprapubic incision, the ureter, taking away about half of the bladder, including the left ureteral orifice. The patient was reported cured.

The chief objection to resection is that one can never be sure that he has removed all the diseased parts, for tubercular portions of the bladder may easily escape observation and be left behind. Hunner (*Am. Med.*, 1901, Vol. 7, p. 706) is not in favor of resection at the time of nephrectomy, except in rare instances, believing that many of the bladder lesions are not tubercular, and that they will get well of themselves in time.

In order to determine what effect on the bladder nephrectomy has, the writer has compiled the following two tables.

The cases were selected with care, and only those instances were selected in which the cystoscopic examination was made both before and after the nephrectomy. Table 1 includes

those cases in which there was nephrectomy with recovery, in which cystoscopy previous to operation showed but slight changes in the bladder, while Table 2 was made up exclusively of nephrectomies with recovery, in which there were marked changes in the bladder, principally in the nature of ulcerations of more or less extent. There were twenty-three cases in Table 1 and thirty-three cases in Table 2. Each case was narrowly inspected, and by "well" is meant frankly well, without symptoms. In Table 1 there are seven cures in twenty-two cases; probably more than seven, because in seven of these twenty-two cases the end result was not given. If we subtract these seven cases (Cases 1, 3, 6, 19, 20, 21, 22), the percentage of cures is 46.6 per cent. This does not mean that 46.6 per cent. of nephrectomies in cases in which there are slight bladder changes will inevitably be followed by cure. It is presupposed that the rest of the body is moderately healthy. If this is so, these figures cannot be far from the truth. The percentage seems high, and it is high, but it must be remembered that the conditions were most favorable. There were two cases in which improvement had lasted quite a while (Cases 13 and 14), respectively eight and six years, and the two that died survived the operation seven and four years respectively. "Improved" is with reference to bladder symptoms.

Analyzing Table II., we find thirty-two cases in which the result is definitely stated. There are fourteen cures, ranging in duration from one to eleven years, a percentage of 43.7, practically, the same as in the table compiled from bladders with very slight lesions. The conclusion is inevitable—either nephrectomy exerts a specific effect on bladder tuberculosis, or else these bladders are, many of them, not tubercular; the close similarity of percentage seems to favor the view that many of the bladders are not tubercular. From published reports it is impossible to deduce whether the bladder in question was tubercular or not. If we adopt the tubercle as a criterion of vesical tuberculosis it is impossible to deduce anything of value from the published reports, for its presence or absence was not mentioned in most cases. In the writer's two cases (Table 2, Cases 5 and 6) tubercles were present in Case 6 and not in Case 5, and it is worthy of note that in Case 6 healing was much more rapid than in Case 5. This much we can say: Examples show that nephrectomy exerts a favorable influence on these vesical lesions, hastening their healing and ultimate disappearance. We can also say

that, following nephrectomy, severe lesions will heal. An examination of Table 2 shows that, while on the one hand severe ulcerations of the bladder sometimes did not heal promptly (Cases 5, 6, 17, 18, 21, 23, 25, 28, 29), yet on the other hand there were some cases (Cases 13, 19, 27, 32) in which healing was quite

TABLE I.
CASES OF NEPHRECTOMY WITH RECOVERY, IN WHICH CYSTOSCOPY

No.	Name and Reference	Age	Nature of Operation	Duration
1	Küster— <i>Berlin klin. Woch.</i> , 1888, p. 934.	22	Lumbar nephrectomy. Side not stated.	Not stated.
2	J. H. Adams— <i>Glasgow Med. Jour.</i> , 1897, vol. 47, p. 23.	28	Right lumbar nephrectomy	5 years....
3	Cullen (Personal communication)....	37	Right nephroureterectomy.	3½ years...
4	McCosh (F. Tilden Brown)— <i>Boston Med. and Surg. Jour.</i> , 1901, vol. 144, p. 516.	30	Left lumbar nephrectomy..	One year...
5	König (Pels Leusden)— <i>Dtsch. Zeit. f. Chir.</i> , 1900, p. 11.	17	Left lumbar nephrectomy..	4½ years...
6	W. D. Hamilton— <i>Med. News</i> , New York, 1898, September 17, p. 374.	23	Right lumbar nephrectomy.	Few m'ths.
7	Czerny (Simon)— <i>Beitr. z. klin. Chir.</i> , 1901, vol. 30, p. 34.	17	Left lumbar nephrectomy..	12 months.
8	Czerny (Simon)— <i>Beitr. z. klin. Chir.</i> , 1901, vol. 30, p. 27.	34	Right lumbar nephrectomy.	6 months..
9	Czerny (Simon)— <i>Beit. z. klin. Chir.</i> , 1901, vol. 30, p. 45.	21	Right nephrectomy.....	4 years....
10	Albarran (Cottet)— <i>Bul. de la Soc. Anat.</i> , Paris, 1899, vol. 74, p. 108.	30	Right nephrectomy.....	A few years
11	F. T. Brown— <i>Boston Med. and Surg. Jour.</i> , 1901, vol. 144, p. 518.	34	Right lumbar nephrectomy and partial ureterectomy (8 inches).	3 years....
12	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 12).	23	Left nephroureterectomy...	Several yrs.
13	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 13.	30	Right nephroureterectomy.	2 years....
14	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 13.	25	Right nephrectomy and partial ureterectomy.	3 years....
15	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 15.	22	Left nephrectomy.....	Several yrs.
16	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 15.	33	Left nephroureterocystectomy.	10 months.
17	Cullen (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	47	Left nephroureterectomy..	Not stated.
18	Willy Meyer— <i>Medical News</i> , New York, 1897.	39	Right nephrectomy.....	6 months..
19	Albarran (De Sard)— <i>Le Cathéterisme Cystoscopique des Urèteres</i> , Paris, 1900, p. 133.	30	Left nephrectomy.....	27 days(?)
20	F. Tilden Brown— <i>Ann. of Surg.</i> , 1899, p. 609.	34	Left lumbar nephrectomy..	2 years....
21	E. Reynolds— <i>Johns Hopkins Hospital Bulletin</i> , 1898, No. 92.	31	Right lumbar nephrectomy.	8 years....
22	Steinthal— <i>Beitr. z. klin. Chir.</i> , 1890, p. 745.	33	Right lumbar nephrectomy.	Not stated.

prompt, although there were marked extensive ulcerative vesical changes. The writer wishes to emphasize one point, and this is that treatment does not end with nephrectomy. Months, if not years, of painstaking and thorough watchful treatment are sometimes necessary before the disease is finally overcome. Unfortu-

TABLE I. (Continued).

PREVIOUS TO OPERATION SHOWED SLIGHT CHANGES IN THE BLADDER.

Cystoscopy	Urine	Path. Condition	Ultimate Result
Moderate injection of mucous membrane.	Pyuria. T. B.	Tuberculosis of kidney.	Not stated.
"Hypertrophied mucous membrane and varicose veins."	Pyuria.....	Tubercular kidney and ureter.	Three months later, patient better.
Irregular areas of congestion, especially on right	Pyuria. T. B.	Tubercular right kidney and ureter.	Lost sight of.
Discrete patches of hyperemia over base.	Pyuria. T. B.	Tubercular kidney...	Four years later well. Urination 5 times in 24 hours.
Swelling of trigone. ulcers	No Pyuria.	Tubercular kidney...	Improved. Married 5 years later. Symptoms of right renal tuberculosis. Death 7 years after operation.
Base of bladder and right eminence red.	Pyuria.....	Tubercular kidney and ureter.	Not stated.
Mucous memb. around ureteral orifice red and swollen.	Pyuria. T. B.	Tubercular kidney...	Three yrs. later, urine normal. Some pain in right side.
Injection of mucous membrane especially about right orifice.	Pyuria.....	Tubercular kidney...	Three years later, general condition only a little better. Died 4 yrs. after operation.
Slight redness of whole mucous memb. Right eminence elevated and raised, "but not tubercular."	Pyuria. T. B.	No Tubercular kidney...	One yr. later, urine normal. Small fistula. No pain.
Cicatrix near right ureteral orifice.	Pyuria.....	Tubercular kidney...	Convalescing. "Bladder not diseased."
Congested trigone and gaping right orifice.	Pyuria. T. B.	Tubercular kidney...	Five months later, no pain. Gained 75 pounds. Still has frequent micturition. Guinea-pig test, negative.
Left orifice granular and red.	Pyuria. T. B.	No Tubercular kidney. Chronic ureteritis.	Eight years later, perfectly well. Marri'd 4 yrs, 2 child'n.
Redness about right orifice. Otherwise normal	Pyuria. T. B.	No Tubercular kidney. Chronic ureteritis.	Eight yrs. later, similar symptoms on left side.
Bladder normal, except red right orifice.	Pyuria. T. B.	Tubercular kidney. Ureter not examined.	Five yrs. later, operated for pelvic tuberculosis. Six yrs. later, fair health.
Bladder normal except for red swollen rt. orif.	Pyuria. T. B.	No Tubercular kidney...	Five years later, well. Has been doing heavy work.
Bladder normal except for red orifice.	T. B.....	Tubercular kidney and ureter.	Two yrs. later, perfectly well. No symptoms.
Slight reddening around left orifice.	T. B.....	Tubercular kidney. Chronic ureteritis.	Two years later, perfectly well.
Normal bladder except red trigone and purplish red spot over rt. eminence.	Pyuria. T. B.	Tubercular kidney.	Four months later, perfectly well; 14 months later, no bacilli in urine.
"Mucous membrane normal."	Not stated...	Renal tuberculosis.	Doing well.
"Normal bladder.".....	Pyuria. T. B.	Renal tuberculosis.	Not stated.
"Normal bladder.".....	Guinea-pig positive on rt. No T. B.	Miliary tuberculosis. pelvis of kidney.	Not stated.
"Normal bladder.".....	A few blood corpuscles.	Calculus of rt. kidney. Miliary tuberculous nodules on upper half of kidney.	Not stated.

TABLE II.

CASES OF NEPHRECTOMY WITH RECOVERY, IN WHICH CYSTOSCOPY

No.	Name and Reference	Age	Nature of Operation	Duration
1	W. L. Burrage (Personal communication)	31	Left nephrectomy.....	Six years.
2	Czerny (Simon) <i>Beitr. z. klin. Ch r.</i> , 1901, vol. 30, p. 17.	36	Right ureterectomy.....	Not stated.
3	J. Frank— <i>Medical Record</i> , New York, 1899, September 9, p. 373.	39	Right nephrectomy.....	Several yrs.
4	E. Reynolds (Garceau)— <i>Jour. Am. Med. Ass.</i> , 1906, vol. 47, p. 1440. (Case 3.)	37	Right nephrectomy.....	Several yrs.
5	Garceau— <i>Jour. Am. Med. Ass.</i> , 1906, vol. 47, p. 1440. (Case 6.)	22	Left nephroureterectomy, 1897.	One year.
6	Garceau— <i>Jour. Am. Med. Ass.</i> , 1906, vol. 47, p. 1440. (Case 18).	21	Right ureterectomy.....	Several yrs.
7	E. J. Ill— <i>Trans. Am. Assn. Obst. and Gyn.</i> , 1899, vol. 12, p. 137.	Adult.	Left nephroureterectomy...	One year...
8	König (Pels Leusden)— <i>Deutsch. Zeit. f. Chir.</i> , 1900, p. 4.	26	Left lumbar nephrectomy..	One year...
9	W. R. Pryor (Personal communication).	31	Right abdominal nephroureterectomy.	Two years..
10	W. R. Pryor (Personal communication).	20	Left abdominal nephroureterectomy.	Not stated.
11	E. Reynolds— <i>Med. Jour.</i> , New York, 1899, Aug. 12, p. 200.	Adult.	Left lumbar nephrectomy..	Five years..
12	Tuffier— <i>Bul. et Mém. de la Soc. de Chir. de Paris</i> , 1897, No. 23, p. 56.	28	Left lumbar nephrectomy..	Four years.
13	Willy Meyer— <i>Ann. of Surg.</i> , 1898, p. 248.	19	Right lumbar nephrectomy.	Six months
14	L. Caspar— <i>Berlin klin. Woch.</i> , 1896, Apr. 27.	42	Right nephrectomy.....	Six months
15	H. N. Vineberg— <i>Medical Record</i> , New York, 1898, vol. 53, p. 193.	48	Right lumbar nephrectomy.	Six months
16	Cullen (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 13.	22	Right nephrectomy.....	Three years
17	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 13.	26	Left nephroureterectomy; curettage of bladder.	Several yrs.
18	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 13.	40	Right nephroureterectomy.	3½ years...
19	Kelly (Hunner)— <i>Johns Hospital Bulletin</i> , 1904, vol. 15, p. 15.	29	Left nephrectomy and cystotomy.	3 years...
20	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 15.	30	Right nephrectomy.....	9 months..
21	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 15.	32	Vesicovaginal fistula with subsequent closure. Left nephrectomy.	Several yrs.

TABLE II. (Continued).

PREVIOUS TO OPERATION SHOWED MARKED CHANGES IN THE BLADDER.

Cystoscopy	Urine	Path. Condition.	Ultimate Result
Ulceration of trigone and irritation about right orifice.	Pyuria.....	Tubercular kidney..	Nine months later, irritable bladder, ulcers. Died 2 years later.
Left orifice red; ulcerations about left orifice.	Pyuria. T. B.	Tubercular kidney..	Well for several years, then pains in rt. lumbar region.
Ulcer of neck of bladder..	Pyuria. T. B.	Tubercular kidney..	One year later, improved. Still had vesical symptoms.
Many small ulcers in the bladder.	Guinea-pig positive No T. B.	Tubercular kidney..	Complete relief for 6 yrs. after operation, then severe vesical hem., incontinence, pyuria, and recur. of vesical ulcers. Cond. of left kidney not known.
General inflammation, scars, numerous ulcers throughout.	Pyuria. T. B.	No Tubercular kidney and ureter. Ureter much thickened; char. changes.	One yr. later, irrit. from ulcers. 6 m. later, whole bladder filled with gran. tissue; ether, thorough cautery, nit of silver; 6 m. later, small red area over left orif.; con. treatment; 4 yrs. after oper. well; it is now 10 yrs. since the oper.; urine is normal; twice daily.
Large ulcer near right orifice. General injection; granulation tissue.	T. B. Guinea-pig positive	Tubercular kidney..	Two yrs. after nephrectomy, cautery whole bladder with silver under ether—relief. Constant blad. treatment for 3 yrs. Then vag. cystotomy. Constant blad. treatment, especially Guyon treatment for 5 yrs. more. Fistula closed. Has been well 3 yrs. It is now 11 yrs. since oper. Urine normal; blad. normal; no vesical irritability. Guinea-pig test positive 3 yrs. after oper.
Ulcerations in the fundus	Pyuria. T. B.	Tubercular kidney..	Practically well. "single ulceration in the bladder."
"Elevations on trigone"	Pyuria.....	Tubercular kidney..	Three months later, "Well; urine still cloudy."
Ulcers of bladder.....	Pyuria. T. B.	Tubercular kidney..	Three years later, well. Repeated cystoscopy negative
Tubercles in bladder....	Not stated....	Tubercular kidney..	One year later, well. Cystoscopy showed nothing abnor
General inflam.; erosion about left orifice.	Pyuria.....	Tubercular kidney..	Eighteen months later, well.
(Five months after oper. ulcer near left orifice.)	Pyuria. T. B.	Tubercular kidney..	Nine ms. after oper., fair cond. Bladder still troublesome.
Numerous small tubercles hypertrophy. ulcers of right orifice.	T. B.....	Tubercular kidney..	Some ms. later, no urinary symps. Gained 20 pounds.
"Tubercular bladder."	Pyuria. T. B.	Tubercular bladder..	"Prompt and complete relief."
Right orif. irreg. swollen; it presents projections; small red areas over whole bladder.	Pyuria. T. B.	No Tubercular kidney. Bacilli found.	Well four months later
Right half of bladder thickened; ulcerated area about right orif.	Not stated...	Tubercular kidney..	Seven years later, married and in good health
Extensive ulcerations posterior wall.	Pyuria. T. B.	Tubercular kidney..	Patient seen 5 yrs. later, much imp'd; still frequency of micturition and blad. wall shows "same degree of ulceration."
Ulcers over right hemisphere.	Pyuria. T. B.	No Tubercular kidney; chronic ureteritis.	Four years later, "symptoms of bladder trouble persist." Health is generally better.
Diffuse ulceration of bladder.	Pyuria.....	Tubercular kidney..	Four years later, bladder normal; still incontinence.
Reddening and extensive ulcers about right orifice.	Not stated....	Tubercular kidney..	Three years later, perfectly well. At times after exposure to cold and wet, slight bladder symptoms.
Left half of bladder extensively ulcerated.	Not stated...	Tubercular kidney. ureter and bladder	Three years later, has gained 45 pounds; left half of bladder red; no ulcers

TABLE II. (Concluded).

No.	Name and Reference	Age	Nature of Operation	Duration
22	Hunner—(<i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	57	Vesicovaginal fistula curet age; left nephrectomy.	Several yrs.
23	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	28	Left nephroureterectomy...	15 months
24	Cullen (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	24	Right nephroureterectomy.	2 years....
25	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	34	Right ureterectomy.....	4 years....
26	Kelly (Hunner)— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 16.	52	Vesicovaginal fistula, with subsequent closure. Left nephroureterectomy.	13 months.
27	Hunner— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 17.	29	Right nephroureterocystectomy.	Several yrs.
28	Hunner— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 17.	19	Vesicovaginal fistula; irrigations; right nephrect'y	1 year....
29	Hunner— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 17.	38	Left nephroureterectomy...	3 years....
30	Hunner— <i>Johns Hopkins Hospital Bulletin</i> , 1904, vol. 15, p. 17.	30	Right nephroureterectomy.	7 months..
31	E. J. Ill— <i>Ann. of Surg.</i> , 1903, vol. 38, p. 525.	27	Left nephroureterectomy...	1 year....
32	E. J. Ill— <i>Ann. of Surg.</i> , 1903, vol. 38, p. 525.	22	Right nephroureterectomy	3 months..
33	Fenwick—"Ulceration of the Bladder." London. 1900, p. 73.	32	Left nephrectomy.....	2 years....

nately there is another point that has to be stated: the disease may apparently be thoroughly eradicated and then reappear. Case 4 illustrates this. This patient did exceedingly well for six years after her nephrectomy; the bladder symptoms disappeared, only to reappear again at the end of this long interval. In such cases we must suspect hematogenous infection of the remaining kidney, with descending tuberculosis. Recurrences of this nature are seen in Table I., Cases 5 and 13, and in Table II., Case 2, the recurrence in the kidney taking place, respectively, five and eight, and "several" years after the primary nephrectomy. The proneness to surgical affections that single kidneys are known to have should make us give a guarded prognosis in all these cases. Truly the disease is a desperate one.

NONTUBERCULAR CYSTITIS.

Inflammation of the bladder, which has remained strictly localized and has not extended to either kidney, is in most instances

TABLE II. (Concluded).

Cystoscopy	Urine	Path. Condition	Ultimate Result
Bladder ulcerated over left half.	Pyuria. T. B.	Tubercular kidney and ureter.	Two years later, good health. Good appetite; sleeps well; "at times troubled with bladder symptoms, and lumbar wound still open."
Universal ulceration of bladder.	Pyuria. T. B.	Tubercular kidney and ureter.	One year later, still has bladder symps. and hematuria.
"Right posterior wall is deeply inflamed."	Not stated...	Tubercular kidney and ureter.	One year later improved. "Frequent micturition and discomfort if urine is held."
Diffuse ulceration about ureterovesical anastomosis.	Not stated...	Tubercular kidney..	One year later, "some bladder symptoms."
General inflam. and deep ulceration about left orifice.	Not stated...	Tubercular kidney and ureter.	One year later "bladder perfectly normal; no symptoms; some pus in urine with colon bacillus."
Ulcer about right orifice and another on vertex of bladder.	Not stated...	Tubercular kidney and ureter; ulcerative cystitis.	One year later, perfectly well. Nursing a five-months old baby. "Bladder everywhere normal."
Universal ulcerative cystitis.	T. B.	Tubercular kidney..	Two years later, still under treatment for cystitis.
Left half of bladder inflamed and ulcerated.	T. B.	Tubercular kidney and ureter.	One year later, "bladder less inflamed and holds 120 c.c. without discomfort."
Right third of bladder inflamed and ulcerated.	T. B.	Tubercular kidney.. and ureter.	One year later, "bladder shows an inflamed area about rt. orifice, 3 cm. in diam. Bladder holds 360 c.c. without discomfort."
Tubercular ulcerations around base and left orifice.	Not stated...	Tubercular kidney	Four years well; urine normal; bladder normal.
Many tubercular ulcers in lower part of bladder.	T. B.	Tubercular kidney..	Eighteen months later, well; bladder normal.
"Left ureteral orifice patent and caked; it was obviously tubercular."	T. B.	Tubercular kidney..	Three years later, well. Bladder not diseased.

quite amenable to treatment. There are, however, some forms of the disease which do not yield readily and which are exceedingly difficult to cure. Those forms of cystitis which are due to long-continued suppurative processes in the upper passages, in which the inflammation has had time to give rise to deep vesical lesions, are sometimes most intractable, even after the disease above the bladder has been cured.

Every case of cystitis should be thoroughly examined with reference to the possibility of there being present inflammation of the ureter or the kidney. It may be necessary to administer ether in order to make this examination thorough, the severely inflamed condition of the membrane precluding the requisite instrumentation. A contracted bladder often disappears under ether, and the relaxed unconscious condition of the patient allows of a thorough exploration, and determines the best course of treatment.

Before beginning the treatment of a case of intractable cystitis, it is essential that the upper passages shall have been freed from

disease. A nephrectomy or a nephrotomy may be necessary, a calculus may have to be removed, a strictured ureter may have to be operated upon, and any other diseased condition cured. Unless these measures are attended to it will be useless to expect a cure. It is astonishing to note the rapidity with which an apparently incurable cystitis will sometimes clear up after removal of a stone in the kidney, the symptoms ceasing almost immediately, and the mucous membrane rapidly taking on a normal appearance. There are some patients who will decline to have a suppurating kidney removed, fearing the operation. It is not best to encourage the hope in these patients that a suppurating kidney will perhaps become inactive in time. In one of the writer's cases such a condition, probably due to a calculus in the kidney, has now lasted for nine years. This patient absolutely refused to have the kidney touched. A cystotomy was performed to relieve the bladder symptoms, and the usual treatment carefully followed after this operation in the hope that the kidney would cease to be active. After seven years, there being only a slight amount of pus in the urine, an attempt was made to close the fistula, without success. The kidney does not cause symptoms, but the pus proceeding from it undoubtedly keeps up the cystitis and will do so until the organ is removed.

There are not a few cases of chronic cystitis in which the exciting cause is a ureteritis, due, possibly, to previous gonorrheal inflammation, with slight strictures, not large enough to completely occlude the lumen of the canal. Ureteritis is very difficult to diagnose unless one is on the lookout for it, but its possible presence should always be borne in mind. A cystotomy is not curative in a condition like this, and does not even give very much relief, the symptoms of irritable bladder persisting in some degree even after the fistula has been made. Should the fistula be closed, the symptoms recur at once.

It is well in all cases of chronic cystitis to determine the form of organism present. It gives some idea as to the severity of the disease, and the probable duration of treatment. Cultures taken during the course of the treatment will also give a fair estimate as to the progress, by noting the number of colonies present in the tube. The method of treatment at the present time does not vary with the kind of germ present, and it seems to the writer that the next advance in the treatment of the disease must be in this direction. Wright's method, by injection of appropriate vaccine, is a step forward.

Chronic cystitis is a disease which requires the most untiring patience in its treatment. Progress is slow. It may be months, if not years, before the patient is well. It is best in all cases not to push the treatment too hard; not to attempt too much at one time, and to rely on gentle measures before resorting to severe ones. Patience will sometimes accomplish unlooked for results. Of late years there has been a tendency to rely rather too much on instrumental measures for the cure of cystitis; there is danger that too much instrumentation may do harm rather than good. The general health should be particularly looked after. Sometimes removal to another climate under favorable circumstances will so influence the regenerative process that cure will result without any other means. The patient should live under the most careful hygienic surroundings, and have an abundance of fresh air and good food. Careful attention should be given to excretory processes. The patient should be directed to take large amounts of water, to get rid of the bacteria, and render the urine bland. With alkaline urine, boric, benzoic, or camphoric acid should be given, and if the urine is acid, it should be made alkaline with the citrate of potash. Special attention should be paid to the probable cause of the cystitis. A suppurating focus in the neighborhood of the bladder will sometimes, probably through the lymphatics, keep up a cystitis indefinitely. In one of the writer's cases a fistula-in-ano was the cause of the continuance of the trouble, and as soon as the fistula was operated upon, the cystitis rapidly disappeared; in another case, of purulent salpingitis, the bladder affection rapidly disappeared after operation for removal of the tube. A chronic urethritis may sometimes be responsible for chronic cases, the urethritis not being recognized unless a careful examination has been made, and the symptoms being attributed entirely to the bladder affection.

Many cases of chronic cystitis can be avoided, and are the result of improper treatment of the acute stage of the disease. Acute cystitis should be treated with the greatest care, and should be regarded, in the light of possible long continuance of the disease with its attendant suffering, as a most serious affection. It is difficult to get these patients to go to bed, and yet this is the most essential point with reference to treatment. A long rest in bed in the acute stage will almost always result in rapid cure.

A form of chronic cystitis which has not heretofore been much studied is that form which affects the trigone of the bladder, and which has been variously described as "hyperemia," "neurosis of the bladder," and "irritable bladder."

There is an undoubted condition of hyperemia of the trigone of the bladder and the vesical neck, but this simple hyperemia may, and does, easily pass over into a true inflammatory condition. Hyperemia of the bladder is common enough, and is frequently seen in pregnancy, and as an accompaniment of pelvic inflammatory conditions. It rapidly disappears when the cause is removed, and its nature is solely dilatation of the blood-vessels which become dilated in consequence of the increased flow of blood in the pelvic cavity, which is due to conditions altered from the normal. The intimate anastomoses between the vesical arteries and those of neighboring organs makes this engorgement of the trigone very easy. Hyperemia of the bladder is not uncommon after pelvic operations, particularly total hysterectomy. In these cases it is most likely to pass over into an inflammatory condition and cause a great amount of suffering. The chief symptom is an irresistible desire to pass water, usually without pain. The desire is constantly present, and in severe cases the patient is obliged to urinate every half hour or so, and gets up many times during the night. The nervous system soon suffers, and the patient may be reduced to a serious state.

While simple hyperemia subsides on removal of the cause, chronic inflammation of the trigone is not so apt to do so, although it is very favorably influenced by the cure of associated diseased conditions. The distinction between hyperemia and true cystitis of the trigone is sometimes very difficult. Its seat is quite well limited by the triangle formed by the ureteral orifices and the neck of the bladder. In severe cases not only the trigone, but the vesical neck and urethra have the scarlet red appearance which is characteristic of the affection.

This disease has been well and ably investigated by Heymann (*Centralb. f. die Krank. der Harn und Sex. Org.*, 1905, vol. 16, p. 422). This writer speaks of the ease with which the bladder is infected, and he believes that in these cases of chronic cystitis of the trigone the primary lesion is a simple hyperemia upon which the germs become engrafted, with resulting chronic inflammation. The urine is not much altered in these cases; it is usually apparently quite clear, but a careful examination

will show an excess of epithelial cells, some blood and pus, and various bacteria. Heymann was struck with the frequency with which this affection occurred in women. He therefore made a careful investigation of all women in his clinic for a period of five years, comprising 2,963 cases. Of these, 663, or 20.6 per cent., complained of bladder symptoms. All these women were examined with the cystoscope. The affection under discussion was present in 398, or 13.4 per cent., figures which almost exactly correspond to the figures obtained in a similar investigation made by the writer in a series of two hundred gynecologic

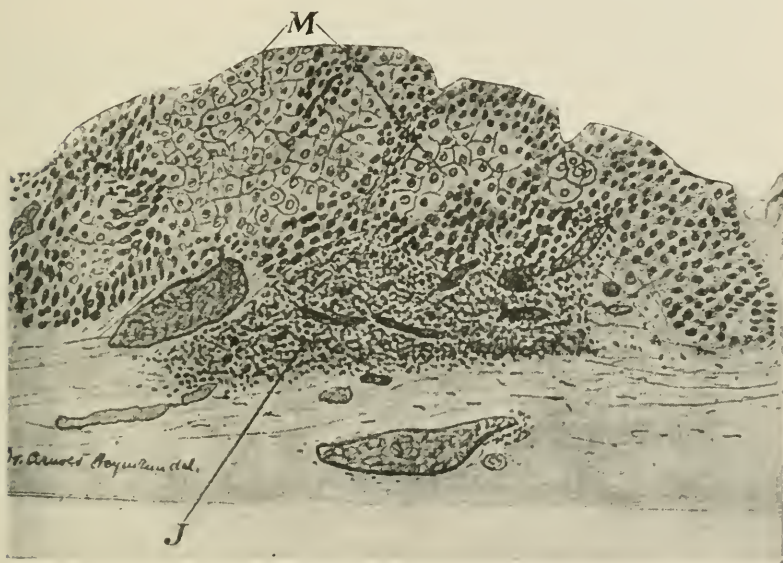


Fig. 1.—Neck of bladder. Vessels dilated. Epithelium proliferated, showing metaplasia (M). Circumscribed infiltration (J). (From Heymann.)

cases, examined with reference to this point. This affection was found by the writer in thirty instances, or fifteen per cent. In Heymann's list almost two-thirds of the entire number of bladder affections in women had this chronic inflammatory affection of the trigone.

In the beginning of the disease there is marked active hyperemia, which is caused by the dilatation of the blood-vessels. Later, the membrane loses its luster, the mucosa becomes redder, and there is an exudation of leukocytes which are found in the urine. In the later stage of the affection the membrane has

a velvety appearance, and in some cases there are proliferative processes which lead to the formation of papillary or warty excrescences (Fig. 2). In marked cases the papillomatous formation may even present the appearance of a bladder tumor, and an excellent example of this form was described by Bierhoff (*Medical News*, New York, 1900, Vol. 76, p. 809), who re-

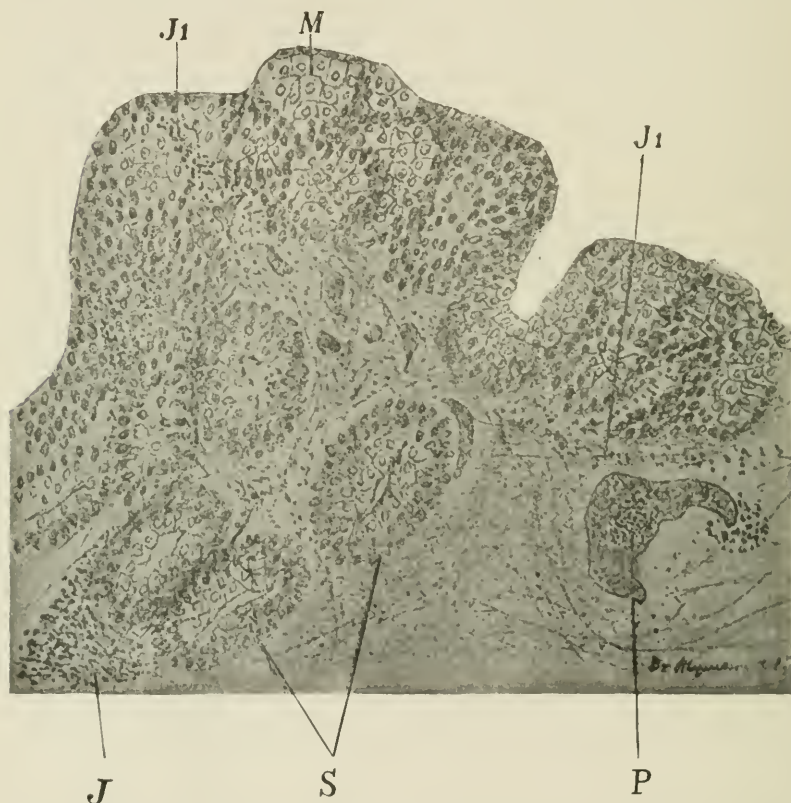


Fig. 2.—Neck of bladder. Epithelium proliferated, projecting into the deeper tissues as large alveoli (S). Diffuse metaplasia and infiltration, circumscribed and general (M). (From Heymann.)

ported a bladder covered with papilloma-like excrescences with a broad base, the affection being limited to the trigone. The minute pathologic anatomy of this affection was carefully studied by Heymann in a later article (*Centralb. f. die Krank, der Harn und Sex. Org.*, 1906, Vol. 17, p. 177), and he microscopically examined twenty bladders of patients who had been affected by this disease. Heymann called special attention to epithelial pro-

liferation, marked round cell infiltration, and metaplasia of the cells (Figs. 1 and 2). The subepithelial infiltration of the trigone was specially marked in many of the cases (Fig. 4). The epithelium was thickened, and in some instances there was a marked metaplasia to flattened epithelium (Figs. 1, 2, 3, 5). Papillary projections rising above the surface were seen, and there was also a cystic formation (Figs. 5 and 6) and likewise a tendency for the papillary masses to form in alveolar-like arrange-



Fig. 3.—Trigone. Remains of metaplastic epithelium, surrounded by proliferated cylindrical epithelium (J). (From Heymann.)

ment below the free surface (Fig. 2). Heymann called attention to the metaplasia of the tissue (*loc. cit.*, p. 189). The cylindrical epithelium changes into the squamous variety, and Heymann laid special stress on this point, as he found it in ten of his twenty cases, and he remarked that it was the first time that such a high percentage had been found. Heymann commented on this metaplasia as a possible beginning phase of leukoplakia of the bladder, an affection which has lately assumed considerable promi-

nence,* in view of its being an etiologic factor in the causation of malignant disease of the bladder. Heymann was the first to prove this metaplasia from cylindrical epithelium.

The treatment of this form of cystitis is sometimes simple, but many cases will be found in which the disease is quite difficult to cure. As the affection is comparatively superficial, many cases rapidly yield to occasional applications of mild solutions of nitrate of silver applied through a small cystoscope, the patient being in the knee chest position. The application may be repeated once or twice a week, according to circumstances. At the same time mild bladder injections of boric acid may be used, and the patient may take internally a few doses of urotropin daily. If there is no other pelvic condition, the disease will rapidly yield



Fig. 4.—Trigone. Epithelium showing marked hyperplasia, horny in the upper layer. Subepithelial infiltration. (From Heymann.)

to treatment; but if there is, a cure will usually be delayed until the cause has been removed. The disease is especially annoying in those cases of pelvic disease which are long continued and protracted. Under these circumstances, especially if the woman is neurotic as a result of her suffering, the disease gives the greatest amount of suffering. The writer has found the affection particularly obstinate in cases of marked retroposition of the uterus; in these cases not only the disturbance in circulation must be considered, but likewise the mechanical derangement. Post-operative cases are likewise especially intractable. In one of the writer's cases in which this affection followed a total

*See article by Breck (*Wien. Med. Press*, 1896, Nos. 36 and 37); also Heymann (*Monats. f. Urol.*, Berlin, 1906, Vol. II., p. 86), and Ravasini (*Centralb. f. die Krank. der Harn und Sex. Org.*, 1903, Vol. XIV, p. 255).

hysterectomy, the suffering was such that a cystotomy was necessitated. Complete relief followed, and the fistula was closed, against advice, some months later. Immediately the old train of symptoms recurred, and persisted for nearly a year longer, when they finally disappeared. In these post-operative cases there is some reason for believing that there is disturbance in the nervous mechanism of the bladder control, due possibly to section

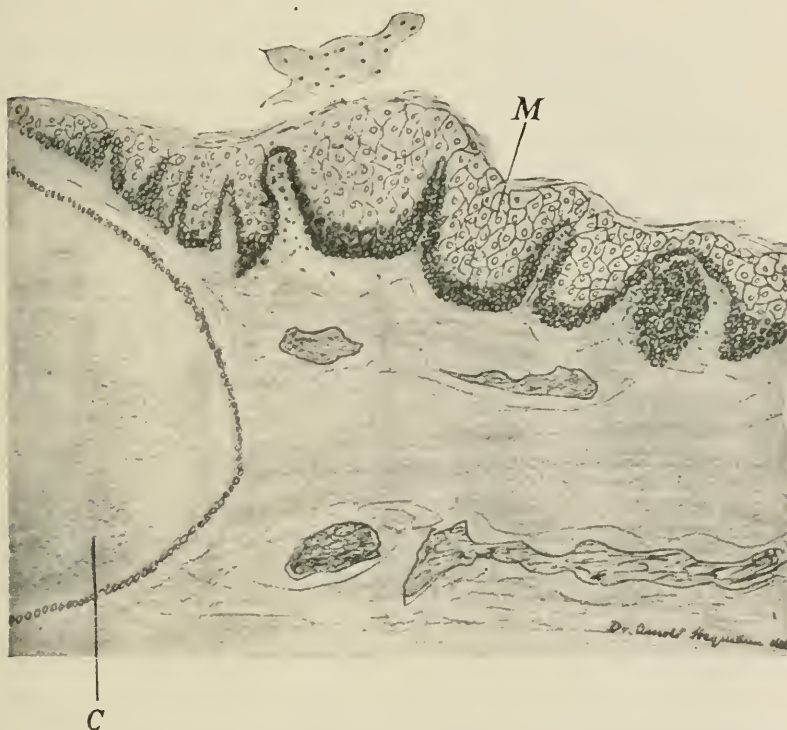


Fig. 5.—Neck of bladder. Marked epithelial metaplasia (M). Large cyst lined with cuboid epithelium (C). (From Heymann.)

of vesical nerves. If there is a condition of papillomatous change, it is best to scrape the trigone with a curette. This operation may easily be performed through a cystoscope. Lasio (*Virch. Arch.*, 1904, Vol. 178, p. 65) has experimentally shown that a curetted normal bladder regenerates in about three weeks.

The pathology of chronic cystitis has been well studied by Hallé and Motz (*Ann. des Mal. des Org. G. U.*, Paris, 1902, Vol. 20, p. 17). These authors examined one hundred bladders

with the greatest care and detail, and the writer is much indebted to them for what follows on the pathology of cystitis. Reference is now made to those cases of long-standing cystitis, which have lasted for a considerable length of time, months or years. These bladders are always thickened, indurated, more or less contracted, and in the most severe cases are practically solid organs of small capacity, which are very rigid. Such bladders are affected in all their layers, from the internal to the external serous covering. The internal layer has lost its normal color, and has assumed a dull appearance. Severe ulcerations in simple chronic

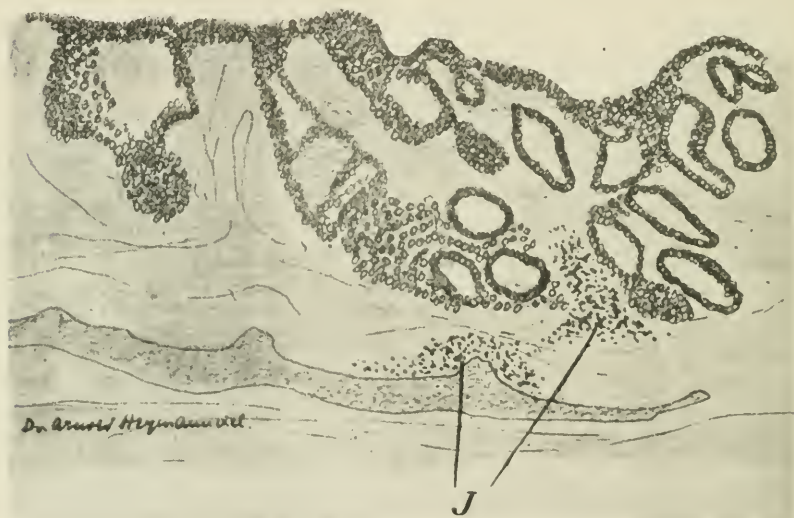


Fig. 6.—Trigone. Epithelium proliferated in alveoli. Cysts with colloid contents. Slight infiltration (J). (From Heymann.)

cystitis are practically never seen. Reference is not made to superficial ulcerations with shallow yellow bases which are so frequently seen in a circular or linear form in these cases of chronic cystitis, and which are common enough; but the deep perforating ulcer is never seen in chronic cystitis, and those cases of deep ulcer which are occasionally met with are regarded by Hallé and Motz as the result of trophic disturbances rather than pure inflammatory conditions. There is an exception to this, and that is the solitary ulcer described by Fenwick, and referred to in this paper in the section on tuberculosis of the bladder. There is every reason to believe that in the female

this ulcer may be caused by pressure of the child's head during parturition, as it is most often observed in women who have just had children. Lime salts may be deposited in these single ulcers, and a contact ulcer directly opposite the irritating deposit may be occasionally observed. Curetting the ulcer and following this up with occasional applications of solid nitrate of silver fused on a probe will effect a cure.



Fig. 7.—Bladder. Sessile vegetation ($\times 70$). A sclerosed bundle of the internal muscular layer cut longitudinally; hypertrophic intrafascicular sclerosis. Complete fibrous transformation and fusion of the submucous tissue, with large venous sinuses. Large vascular vegetation on the mucous surface, with sessile base, flattened on the summit; at the base of the vegetation, in the center, a dilated arteriole filled with blood corpuscles; scattered throughout the vegetation are capillary blood-vessels, in cross section, filled with blood corpuscles. (From Hallé and Motz.)

In chronic inflammatory conditions, the thickness of the bladder, instead of being from five to ten mm., is sometimes as much as two or three cm. in long standing cases. The inflammation affects every part of the bladder wall, and externally underneath the serous coat there is not infrequently an excessive amount of fat. One of the most notable changes is the loss of suppleness.

This is the most serious lesion, because, should the inflammation subside and the bladder get well, there is sometimes great difficulty in expanding the organ, even by long and persistent hydraulic pressure, so that it will hold a fair amount of urine. The interstitial tissue undergoes great increase, and on section this increase is visible to the naked eye. The muscular tissue is also increased in volume and consistency. The perivesical tissue is



Fig. 8.—Large pedunculated vegetation ($\times 70$). Transverse section of the internal muscular layers, hypertrophied, with lesions of atrophic and hypertrophic sclerosis in different stages. In the center of the vegetation numerous dilated capillaries. At the summit of the vegetation an extensive zone of hemorrhagic interstitial infiltration. (From Hallé and Motz.)

increased and indurated, and becomes filled with fat; it is adherent to the bladder and forms a true external envelope.

In the earlier stages of the disease there is either partial or total desquamation of the epithelium, and later on the whole internal coat is cast off, and leaves only a connective tissue lining. Interstitial hemorrhages are not rare near the surface, and the blood-vessels and capillaries are much dilated. Young connective tissue is everywhere seen, and small interstitial abscesses containing pus may be seen here and there. These abscesses

are microscopic, and are seldom of large size; if they discharge their contents into the bladder they leave a small superficial ulceration, which is, however, microscopic.

In some rare forms of cystitis the epithelium, instead of being cast off, proliferates, and leads to the formation of papillary glandular plaques, small inflammatory cysts, and patches of leu-

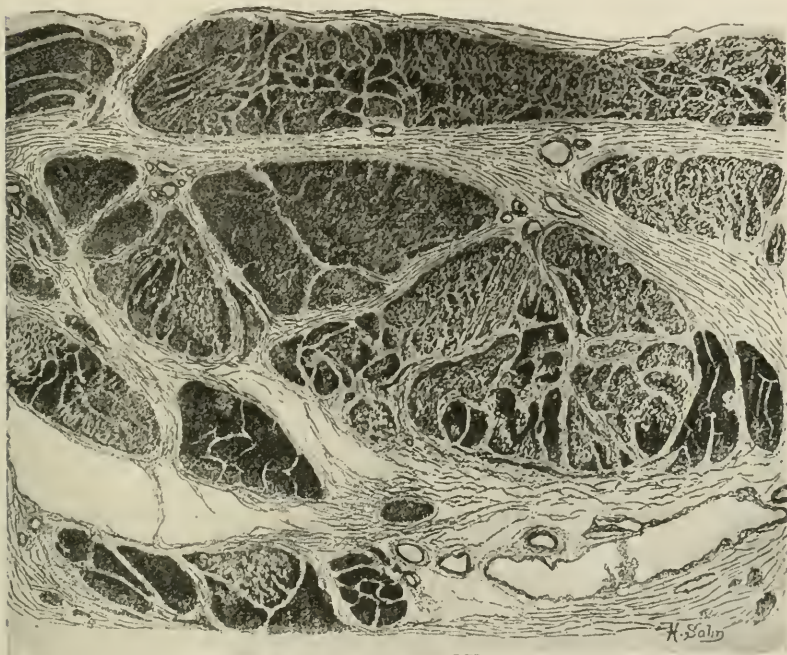


Fig. 9.—Chronic cystitis of five years' duration. Advanced sclerosis and degeneration of muscles (x8). The internal and middle muscular layers are represented. Interfascicular sclerosis, with considerable dilatation of the blood-vessels. Advanced intrafascicular sclerosis with predominance of atrophy; a few secondary fascicular fibers are well preserved. Occasional bundles in a state of granular degeneration. Same lesions, in the same degree, in the internal layer. Section cut perpendicularly to the direction of the fibers. (From Hallé and Motz.)

koplakia. The papillary glandular plaques present a villous velvety appearance analogous to granulation tissue, and they are seen particularly in the neighborhood of the trigone and vesical neck. They are sometimes of quite large size, and in these cases they have a polypoid appearance, and can be readily seen through the cystoscope (Figs. 7 and 8). The inflammatory cysts result from small epithelial inclusions; they are isolated and gland-like,

having undergone degeneration and cystic transformation; they are situated in the superficial layer of the altered bladder surface, and they contain a clear or turbid fluid, and are lined with an epithelial layer. The plaques of leukoplakia are very rare. They are occasionally seen in small plaques, or in rarer instances the change may affect a large part of the bladder surface. These plaques consist of thickened epithelium which has proliferated in

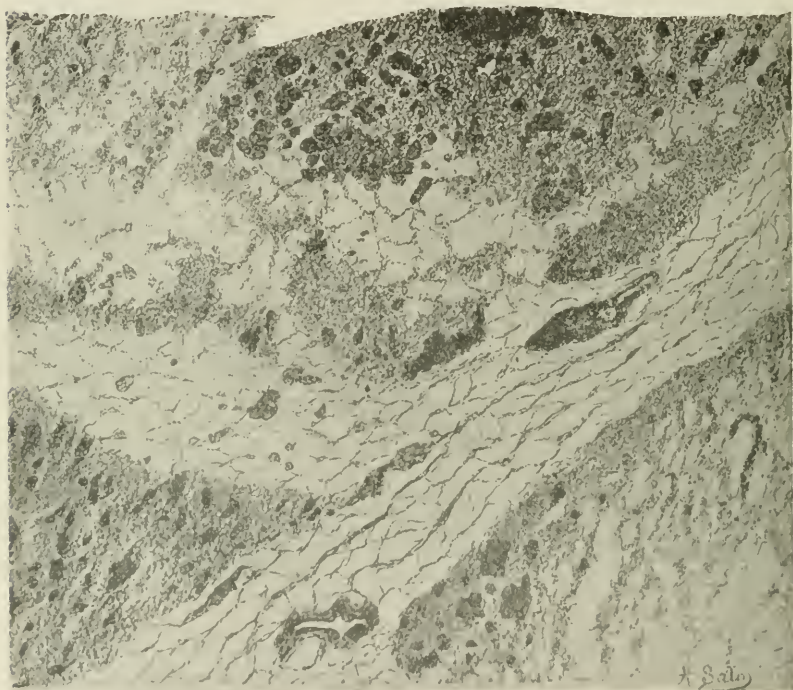


Fig. 10.—Detail of Fig. 9 ($\times 150$). Edges of two bundles. Three kinds of lesions are seen: atrophic sclerosis, granular degeneration, and hyaline degeneration. The intact muscular tissue is seen as well marked islets. Areas of granular and hyaline degeneration surround these muscle bundles. (From Hallé and Motz.)

an abnormal way. The metaplasia is analogous to that which has just been described under chronic inflammation of the trigone. Of particular importance is the possibility that they may give rise to malignant change.

A cystitis may likewise present further degenerative processes, namely, membranous and gangrenous transformation. The membranous cystitis (Fig. 11) results from necrosis of the superficial

layers, and is brought about by an acute exacerbation added to a condition already chronic. The superficial layer dies, and is gradually cast off as a necrotic slough. A portion of the muscular layer may be invaded by this process.

The changes in the muscular tissue of the bladder are well marked. The commonest lesion is hypertrophy, and this is a constant feature in every instance of the disease. This hypertrophy is brought about in consequence of the extra amount of

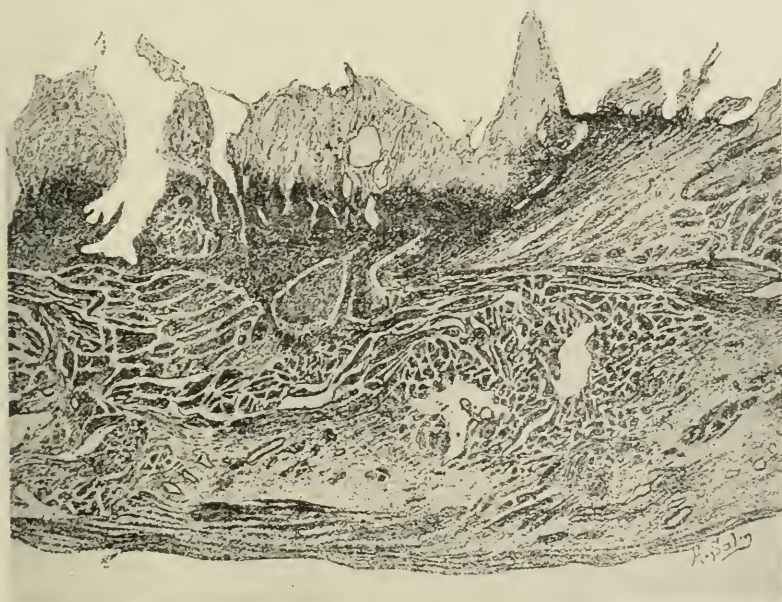


Fig. II.—“Pseudo membranous cystitis” (X4). Thickened bladder, with deep inflammation. Extensive intrafascicular sclerosis, with areas of connective tissue formation and interstitial suppuration. On the surface, a slough about to be cast off, extending to the muscular layer. In the deep layer, interstitial hemorrhage, and young connective tissue. (From Hallé and Motz.)

work which the muscle has to do. The individual fibers increase in volume, and the bundles are evidently enlarged. At the same time the connective tissue between the muscle bundles hypertrophies and hypertrophic sclerosis results (Figs. 9 and 10). The result is abundance of connective tissue between the muscle bundles, which is readily appreciated by the naked eye. Later in the disease the muscle fibers begin to atrophy, diminish in number and in volume, and tend to disappear in the midst of the new

formed connective tissue which encroaches upon and replaces them. This is the atrophic form, and is well pictured in Fig. 10. Granular degeneration of the muscle succeeds, and likewise hyaline degeneration; the latter is less frequent than the former, and is less extensive, being limited to a few areas of one or several sclerosed bundles. Of very rare occurrence is acute myositis. The usual appearances of cell infiltration are seen. In twelve cases examined by Hallé and Motz, this acute myositis was noted in one only. Muscular hypertrophy was seen in all twelve; likewise interfascicular sclerosis. Hypertrophic sclerosis existed in nine, four times extensive, and three times discrete and limited to a few bundles; and atrophic sclerosis was found in eight, in the circumscribed form in six, and in a diffuse form in two. Granular degeneration complicated with sclerosis was found in three cases, and hyaline degeneration in one only.

From this description of these extensive pathologic changes it is evident that a severe form of chronic cystitis cannot yield except to time and a most careful treatment. The importance of *rest* is emphasized by a perusal of these changes in the bladder. The lesions are extensive, the inflammatory changes are under unfavorable conditions with reference to their disappearance; and the germs enclosed within a hollow globe, as it were, constantly keep up and aggravate the inflammatory condition already bad.

Every case should be treated tentatively when it first presents itself before resorting to severe measures. The patient is far better for being in bed for a while, and during this time she may have the bladder drained through a large catheter for several days. Von Hoffmann (*Centralb. f. d. Grenzgeb. Med. und Chir.*, Jena, 1904, Vol. 7, p. 91) has particularly insisted on this point, and he relates a number of cases in which it was of extreme benefit. Dilatation of the neck under primary anesthesia, or with gas, acts in much the same way and relieves severe spasm. At the same time the bladder is washed out with mild antiseptics. Boracic acid has held its own in the treatment of this disease. It is a mild antiseptic, is well tolerated, and it is surprising if its use is persisted in how much good it does. Not only should the bladder be washed out, but the urethra as well. Taussig (*AM. JOUR. OBSTETRICS*, 1906, Vol. 54, p. 465) has emphasized this point. Taussig found that bacteria were very frequently present even in normal urethræ, and he insists upon washing out the urethra in all cases of cystitis. The urethra is easily

washed out by introducing a small cystoscope, after the bladder has been irrigated, withdrawing it slowly, and at the same time thoroughly flushing the urethra by means of a somewhat forcible stream of boracic acid solution. Equal parts of ichthyol and glycerine is an excellent application after this douching, being made with a small glass dropper which is introduced well into the canal.

Urotropin and helmitol may be given internally. Urotropin acts only on an acid urine, while helmitol acts on both. The dose of helmitol is fifteen grains three times a day. The urine should be diluted by drinking large amounts of water. This washes out the bladder, and at the same time gets rid of the bacteria.

Kelly (*Can. Jour. Med. and Surg.*, 1906, Vol. 19, p. 75) recommends the internal use of cantharidin in the following prescription: cantharidin, .001 in 1.0 alcohol, dissolved in 100 parts of water—a teaspoonful three or four times a day. Kelly also recommends for bladder irrigations a 1-1500 to 1-500 solution of nitrate of silver, or a 1-10,000 solution of corrosive sublimate.

Topical applications are of great value and may be made through a cystoscope in the knee chest position. The best drug is nitrate of silver, beginning with a mild solution of five to ten per cent., and using stronger ones if necessary; argyrol may likewise be used, up to fifty per cent. These applications may be made every few days, and they sometimes will do great good. Persistence in the use of these measures will sometimes be rewarded with success. A single patch sometimes remains which demands constant treatment, even for months.

Of more importance than anything else in the treatment is attention to the general health. The trend of medicine and surgery to-day is the study of means which will stimulate the reparative processes. This is particularly the case in surgical affections. The patient should live under the very best hygienic surroundings; abundance of fresh air should be insisted upon; good food should be taken, and in every possible way the body should be taken care of so that the reparative powers may have the best chance to act in a favorable manner.

It would seem as though Wright's treatment must be full of promise, and, judging from the reported cases, it is a field which demands further investigation. The following cases are illustrative of the benefit that may be derived.

Ohlmacher (*Jour. Am. Med. Assn.*, 1907, Vol. 48, p. 575) records a case of cystitis and pyelonephritis with colon bacillus infection; the origin of the disease was a tabetic neurosis and palsy of the bladder, and the affection had lasted three months. The patient was bedridden, and the urine was foul and loaded with thick, greenish, gelatinous pus. There were daily chills, the temperature was at 103° , and there were night sweats. The kidney was plainly palpable and a mass was felt on its ventral surface. The phagocytic index was one-third less than normal. The bacillus was obtained from the urine and a serum made, and the patient inoculated at intervals of five or ten days, and had five doses in all, increasing in size. The index rose, and the symptoms improved at once. The temperature never rose above 100° after the first injection, and after three days the chills and night sweats ceased. The character of the urine changed, the pus became less, and the odor disappeared. There were several gushes of pus, presumably from the kidney. At the time of the report, seven weeks after the last treatment, the patient was about, had gained in weight, and had a good appetite. There was still a very small amount of thin pus in the urine, but ordinarily the urine was clear.

In another case communicated to the writer by Dr. T. C. Beebe of Boston, the effect was likewise remarkable. The patient was seventy-five years old, and had a cystitis of two years' duration. The patient was first seen in April, 1907, and the blood index was low for colon bacillus. A specimen of the urine gave a pure culture of the colon bacillus, and a vaccine was made. One injection was given, and soon after the index rose to 2.62; coincidentally the bladder began to improve. The sediment was appreciably less, there was improvement in the general condition, the appetite became better, and the irritability of the bladder diminished, the patient arising only once at night, whereas previously there had been great frequency of micturition. At the present time the sediment has practically disappeared. The patient took no medicine and had no local treatment while having the injections.

Curetting of the bladder as a routine measure in chronic cystitis is not to be recommended. It is of value in the presence of granulations or of villousities, but it should not be used indiscriminately. In fact, it is difficult to see how much good could be expected of it in view of the deep lesions in a case of chronic

cystitis. It certainly cannot reach the inflamed areas situated well in the bladder substance, and it is in these situations that the chief lesions are, and not on the surface, in long-standing cases. It is of distinct value, however, in superficial lesions, such as vegetations and granulations. The operation is a simple one, being done through a large sized cystoscope. The best form of curette is a stiff wire brush made in a circular form and attached to a small dental engine. There is no danger of perforating the bladder if this method is used, an accident which has occurred by using the curette blindly in bladders which were much diseased and soft in spots.

A bad case of cystitis which has resisted ordinary means will have to be treated by a vaginal cystotomy. This operation gives the bladder a complete rest, and allows the healing process to take place under favorable conditions. The operation is easily performed, as described by Kelly (*AM. JOUR. OBSTETRICS*, 1901, Vol. 44, p. 23), by putting the patient in the knee-chest position, introducing a speculum and cutting the septum with a two-edged knife, after distending the bladder with air. The edges of the two mucous membranes are then brought together with sutures. The cases that do best after cystotomy are those which are carefully followed. The same painstaking care following this operation is as necessary as before it has been performed. Special attention will have to be paid to the general health, and the patient must be put in the most favorable hygienic surroundings: she will have to have the bladder inspected and treated at frequent intervals. Topical applications will have to be made to diseased areas in the bladder in the manner already mentioned. Besides this the patient takes two copious douches of boracic acid by introducing the catheter through the urethra and allowing the fluid to come down through the vagina. A well fitting urinal will collect all the urine as it flows from the fistula. She may also take hot baths, as recommended by Hunner, who advised that the patient get into the tub and remain there for a number of hours. This cleanses the bladder and promotes healing. The edges of the fistula are at first prone to inflammation and deposition of lime salts precipitated from the urine. A few applications of nitrate of silver stick will promote healing. Granulations at the edge of the fistula may come up at any time. They sometimes present as a rosy bunch of tissue with a pedicle. The best way to treat them is to excise them and burn their bases with pure

nitrate of silver. Prolapse of the bladder wall into the vagina through the fistula is an occasional complication. There are two forms: prolapse of the edges of the fistula, and prolapse of the sides of the bladder. This is rarely seen under thirty years of age, and it is more apt to occur in women past middle life, the cause here being laxity of the tissues. In a younger person a fistula may remain open for several years without this complication occurring. In one of the writer's cases a fistula was present for five years, and gave no trouble whatever. Prolapse of the bladder is occasionally observed in cases of fibroid of the uterus, and as a result of the constant pressure the bladder wall may be forced into the fistulous opening and may present in the vagina as a little pedunculated tumor with a rounded tip. A lacerated perineum with a coexisting tendency to prolapse of the pelvic contents may be attended with prolapse of the mucous membrane of the bladder. In such a case it is essential that the perineum be repaired before doing the cystotomy.

When the edges of the fistula prolapse they readily become ulcerated and sore, bleed easily, are tender to the touch, and give rise to a great deal of irritation, especially on walking, or on exertion of any kind. When the summit of the bladder prolapses into the vagina, it does so in the form of stalactites with rounded tips presenting small ulcerations at the tips.

It may be necessary to excise the edges of the fistula, and also the stalactites, if they are very troublesome. The great difficulty is that they are apt to recur, and if they do so repeatedly there is real danger of sacrificing too large a portion of the bladder wall around the trigonum; the repeated prolapse sometimes involves so much tissue as to encroach upon one or both of the ureteral orifices. In one of the writer's cases this accident occurred, and the ureteral opening could be seen on one side presenting almost at the edges of the fistula. In these cases it may be necessary to close the fistula sooner than has been anticipated, and before the bladder has entirely healed.

These complications after cystotomy are not apt to occur in young people, and are of more frequent occurrence in people past middle life. One should hesitate before advising cystotomy in these cases on account of these difficulties; but, unfortunately, it is just these cases that demand this radical method of treatment, the younger patients usually overcoming the disease.

A fistula should be allowed to remain open for several months

at least, or until the inflammation has entirely disappeared, and there is no more pus in the urine. After closure and when the union has become strong, the walls of the bladder may be expanded by hydraulic distention. In cases in which there has been long duration of the disease, it is probable that the capacity of the bladder will never equal the normal, but at all events the bladder can usually be expanded to such limits that the patient can hold the urine for at least three or four hours.

Sometimes after a cystotomy a single patch remains where inflammation is severe, and careful persistent treatment fails to effect a cure. It may be well in these cases to resect this portion of the bladder if it is accessible. The operation may be performed through a suprapubic opening, and, if possible, should be extraperitoneal. The edges of the excised bladder are brought together with catgut sutures, including the entire thickness of the bladder wall, and the outside edges sewed with fine silk.

The technique of vesical resection is well described by Kelly (*Johns Hopkins Hospital Bull.*, 1903, Vol. 14, p. 96). If possible the peritoneum should not be opened, but this will be difficult to avoid in some cases on account of the inflammatory adhesions which exist in old cases subperitoneally between the peritoneum and the inflammatory areas. It may be impossible to effect detachment without tearing the membrane, and in such a case it is necessary to open the abdomen. The abdominal muscles are incised in a vertical direction for about ten cm. above the symphysis, and the peritoneum opened. Kelly then makes a closed pouch by stitching the uterus and margins of each round ligament to the parietal peritoneum of the abdominal wall. This shuts off the general peritoneal cavity, and the bladder may now be excised. In one of Kelly's cases (*Can. Jour. Med. and Surg.*, 1906, Vol. 19, p. 78) this procedure was adopted and the bladder was excised. It would seem as though this operation were rather contraindicated in women who might subsequently become pregnant. If the peritoneum has been opened, it is always best to drain through the vagina, and Kelly advises a small incision which will admit a catheter with a mushroom end. This is withdrawn when the healing becomes firm, and the fistula soon closes. There is danger of secondary rupture along the line of incision of the bladder unless this drainage is employed, and Kelly (*New York State Jour. of Med.*, 1906, Vol. 6, p. 145) relates a case in which leakage took place from overdistention of the bladder two weeks after the operation.

Resection of the bladder will be seldom called for. Kelly estimates that about from three to five per cent. of the cases of cystitis will require this treatment. These are cases in which no progress has been made after long-continued treatment, and in such cases cure will be hastened by resecting the bladder. Large portions may be removed in this way, even half or two-thirds of its extent.

397 MARLBOROUGH ST.

THE ABDOMINAL WOUND; ITS IMMEDIATE AND AFTER CARE.*

BY

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I THINK the generally accepted principle with reference to the incision is that it should be so made as to cause the least injury to the muscles and especially to the nerves; whenever possible we should split muscles instead of cutting them. For the median incision personally I prefer to go through the inner border of the right rectus rather than through the linea alba. For the lateral incision I cut through the outer border of the right rectus, so that we have exactly the same incision to deal with in closing that we have when making the median incision; that is, we have both the posterior and anterior sheaths of the rectus to suture. The same principle applies to the posterior incision for a kidney operation and for an incision in the upper abdomen in operations upon the liver.

In the next place the incision should be so placed and sufficiently ample to facilitate and not to hamper the operator. This is especially true in dealing with pus accumulations. When dealing with aseptic conditions the incision should not be longer than is necessary to operate comfortably. In the presence of septic conditions an abundance of room is safer for the isolation of the septic material. McBurney's incision is desirable in aseptic cases. Where we are likely to find pus it is better to make a simple lateral incision, because we are so much better able to control the

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septic fluids through a simple incision which can be lengthened as desired.

With reference to suturing, it is generally accepted that homologous structures should be brought together. In the median incision the strength of the union depends upon the union of the aponeuroses and fascia.

The only other point which occurs to me in this connection is the question of Pfannenstiel's incision, which is a transverse incision through the skin, fat and aponeurosis, and then a vertical incision through the rectus muscle. The theoretical advantage of this incision is that the muscle or muscles are of use in keeping the aponeuroses together until sound healing is obtained. Where we have a vertical incision all the way through the abdomen, the normal tonic condition of the rectus muscle is of no service whatever in keeping the wound together. In the transverse incision (Pfannenstiel's) the contraction of the rectus muscles assists in keeping the aponeuroses together.

The acceptance of these principles involves the use of tier sutures to obtain the best results. Personally, in addition to believing in suturing homologous structures, I feel that there is an advantage in overlapping the aponeuroses. In other words, the strength of union between superimposed aponeuroses overlapped a third of an inch, more or less, is greater than is obtained when the aponeuroses are sutured edge to edge.

The avoidance of tight sutures and the vitality of the patient are points of definite value in securing primary union. Primary union is favored by the use of tier sutures, as tension can be avoided. Tier sutures, on the other hand, favor dead spaces.

With the through-and-through suture, post-operative hernia occurs in from five to thirty per cent. of cases, according to Winter and LaTorre. The figures they give are to an American quite astonishing. In America five per cent. would probably represent the post-operative hernias with the through-and-through suture. Hernia is most apt to follow when this method of suture is employed in fat women and where drainage is employed. Because of the thickness of the abdominal wall and the length of the sutures, it is mechanically impossible to secure union of homologous structures. In fat women, also, in order to secure approximation of the wound, it is inevitable that the sutures shall be tied rather tightly and this favors suppuration. With the tier suture, in America, hernia occurs in not more than one per

cent. In my experience with the overlapping of the fascia it has been a fraction of one per cent. We all know, however, that we may have suppuration in a wound followed by hernia, no matter what method of suturing we employ.

In the matter of suture material I use catgut for buried sutures and the silkworm gut for the through-and-through suture.

For the care of the wound the essential thing is that the dressing shall protect it from septic infection. My personal preference is for a wet bichloride dressing which shortly becomes dry and is an absorbent dressing. Silver foil is supposed to inhibit germs, but I regard it as inferior to wet bichloride gauze. The most important point in reference to the dressing is that it shall be an occlusive dressing and shall be so applied that it will stay in place. There should be free use of adhesive plaster not only to prevent the dressing from slipping sideways, but also from moving up and down, thus exposing the wound to secondary infection. The upper and the lower strips of plaster should extend above and below the dressing, thus guarding the wound from secondary infection (Edebohls).

These elementary considerations need only to be mentioned, not elaborated, in this society. There are some questions not so universally accepted; for example, that of quiet after operation versus freedom of movement. Personally I see no reason for questioning the soundness of the classical teaching that rest and quiet favor sound healing of wounds. At the present time the tendency is to give patients more freedom of motion after operation than in the past, allowing them to get out of bed after a major operation in twenty-four or forty-eight hours. Unless the approved teaching with reference to the consolidation of the wound being favored by a longer stay in bed be found to be erroneous, the burden of proof must rest upon those recommending earlier motion.

There are two grounds upon which freedom of motion and early locomotion is recommended which are at least plausible. One is that freedom of motion tends to prevent stasis in the venous circulation, and therefore to prevent thrombosis and phlebitis. Our knowledge of the etiology of thrombosis and phlebitis is not sufficient to decide this question on theoretical grounds, and therefore whether or not it is true must depend upon the practical results secured in large series of cases by those who practice the classical and the proposed methods. I see no

other way of settling the question unless additional light is thrown upon the etiology of thrombosis and phlebitis. As it is well known that wounds burst open, no matter how sutured, as late as the second week after operation, it would seem as though patients with abdominal operations must run this risk if early locomotion is permitted. Quite a number of hernias in ordinary simple sections have come under my notice since the present practice of getting patients early out of bed has been in use. I saw a case like that to-day where, after a simple appendicitis operation, the patient developed hernia. She was out of bed in a few days and sent to the country in eight days. Her wound came open after reaching home and then a hernia developed. Such a result after the methods in use in my clinic in clean cases has never been observed, and the result was clearly due to early locomotion.

The second argument in favor of early locomotion is that patients do not suffer from the loss of tone consequent upon a prolonged stay in bed, and also that the patient can return much more promptly to his or her duties, and thus save not only the expense of a prolonged stay in the hospital, but the loss which a prolonged absence from regular duty entails.

This argument is specious, and if the claims for the newer method with reference to the healing of wounds and the avoidance of phlebitis and embolism shall prove correct, the practice will have manifest advantages for all those undergoing operations when their general health is comparatively good. In gynecological practice, however, the argument will have little weight, as the majority of women undergoing abdominal sections are either prostrated by disease or sufficiently neurotic or neurasthenic to require special treatment intended to restore the tone and balance of the nervous system. For patients reduced in strength by hemorrhage or by sepsis from pelvic inflammatory disease the prolonged rest in bed is essential for their restoration to health. For neurotic women who must undergo operations, the best way to avoid the development of post-operative neurosis is to give them a modified rest cure, followed by easy travel.

With reference to the employment of the abdominal bandage as a routine after celiotomy, I shall merely express my individual judgment. For abdominal wounds sutured by the tier method, in which primary union is obtained, the occurrence of hernia is

never to be anticipated, and in my practice, therefore, the abdominal bandage is used in the first few months for its mental rather than its physical effect. When a patient is obliged to apply the bandage on rising, it reminds her that she has been instructed to avoid muscular exertion until at least ten weeks have elapsed. Otherwise, I feel that it has no advantage.

As a special exception, in patients having a flaccid or pendulous abdomen the bandage takes off a certain amount of strain from intraabdominal pressure, promotes the comfort of the patient, and relieves the wound of a certain amount of tension, and is therefore to be recommended. A well-fitting straight-front corset accomplishes the same result.

When drainage has been employed and when wounds have suppurated, the bandage is recommended in the hope rather than the expectation that it will prevent hernia; and partly also as a result of traditional teaching and as a protection against criticism when hernia subsequently develops. The view is so widespread that a bandage is of service under these circumstances that a surgeon who neglects its use must expect criticism, for some years to come, in patients who develop hernia.

POST-OPERATIVE COMPLICATIONS INVOLVING THE ALIMENTARY TRACT.*

BY

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It is conservatively estimated that during the year 1906 more than 75,000 abdominal operations were done in 2,300 American hospitals. The mortality following these operations varied between the very wide limits of 1.5 per cent. on the one hand and 24.5 per cent. on the other. It is fair to assume that mortality merely marks the limit of post-operative morbidity, and that quite as striking a difference occurred in post-operative complications and sequelæ.

A personal inspection of a considerable number of the institutions referred to, and a comparison of their equipment and meth-

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ods, will in large measure afford explanation of this marked discrepancy in results. Fortunately the great bulk of work done to-day is in the hands of competent surgeons and is of a high order of excellence. Yet whatever results may have been achieved in the past, it is incumbent upon all who do such work to strive diligently for further improvement. We must realize at the very beginning that many factors contribute to a high percentage of recovery with ideal convalescence. Chief among them are a due appreciation of the functional value of anatomical structures, a comprehensive knowledge of the principles of pathology, the recognition and correct interpretation of gross pathological lesions in the living subject, an intimate knowledge of the habits and accidents common to the abdominal viscera, a correct estimate of the patient's margin of reserve strength, a wise choice of the time and type of operation, a rigid aseptic technique, a considerable degree of manipulative dexterity, and such *esprit de corps* among one's group of co-workers as will permit of operative speed and precision. It is clear that the consummation of these desiderata necessitates a fortunate combination of time, adequate facilities, proper training, special aptitude, and assiduous application. Yet they are the requisites of uniform success, and as such constitute the most important factors in the prophylaxis of post-operative morbidity and mortality.

It is generally recognized by those who realize the gravity of their trust, that these considerations apply to surgical measures in general, and that the more serious the work and the complications which may follow, the more rigidly do they apply.

In abdominal work the structures which may be more or less seriously impaired by our efforts to relieve real or fancied ills are the circulatory system, the respiratory tract, the excretory organs, the abdominal wall, the peritoneal sac, and the viscera it ensheaths.

Your President has wisely entrusted three of these subjects to men who can speak with authority regarding them. To me he has accorded the privilege of presenting for discussion the remaining topic, viz., some of the "Post-operative Complications Involving the Alimentary Tract."

These complications, like other affections of the alimentary tract, give definite evidence of their existence and their nature by deviations from normal functions alone, or in association with functional disturbances of other structures.

From the standpoint of practical diagnosis, three types of affection may modify the functions of the digestive tract. They are:

1. Functional disturbances of the alimentary tract itself, due to the anesthetic; to slight traumatism from handling the intestines or packing them out of the way; to decomposition of intestinal contents; to the absorption of poisons from the alimentary tract, etc.

2. The second type of affection which may disturb alimentary functions consists in functional or organic affections of other structures of the body, such as local or general peritonitis, and post-operative acute toxic hyperemia of the kidneys, each of which conditions gives a definite and characteristic series of alimentary symptoms.

3. The third type consists in organic lesions of the alimentary tract itself, such as intestinal adhesions, fecal fistula, intestinal obstruction, thrombosis of mesenteric veins, acute dilatation of the stomach, etc.

I. FUNCTIONAL DISTURBANCES OF THE ALIMENTARY TRACT.

The most striking functional post-operative disturbances of the digestive tract are nausea and vomiting, and meteorism, with or without excessive or diminished peristalsis and abnormal discharges.

The significance of these phenomena varies with their individual characteristics, the time of appearance, duration, and associated disturbances. Thus, we must recognize three types of emesis:

- (a) That accompanied by retching,
- (b) That accompanied by nausea,
- (c) The regurgitant or projectile type which is attended by neither nausea nor retching.

The time at which emesis begins is of diagnostic importance. The vomiting due to anesthesia begins before or shortly after the patient becomes conscious and is attended by retching and at times nausea. Its frequency and duration are almost an exact index as to the excessive quantity of ether taken. When given carefully and in small amount by the drop method, emesis is usually entirely absent, or occurs only once or twice within the first twelve hours. When, however, a considerable quantity of ether is required, or when it is poured on until the patient is thoroughly saturated, as was too often the case even a few years ago, the vomiting sometimes persists for eighteen to twenty-four hours, and merges into that due to renal insufficiency.

The emesis of post-operative acute hyperemia of the kidneys usually occurs in cases in which the quantity of ether and the vomiting due to it have been excessive, though there is often a quiescent period of ten or twelve hours. It commonly begins eighteen to twenty-four hours after operation, is slight in amount, accompanied by decided nausea and retching, is frequent and persistent; the tongue is dry, the quantity of urine grows progressively less, and albumin and casts become more and more abundant. When the condition is recognized and a hot air bath given, the excretory organs become active and vomiting ceases abruptly and completely.

In striking contrast to these two types of vomiting, we find the regurgitant or projectile type due to meteorism, ileus, or acute dilatation of the stomach. It rarely begins earlier than twelve hours after operation and is characterized by large quantities of bile-stained fluid which rolls from the mouth with very little effort or nausea.

Other functional complications of the intestines which may rarely occur are dynamic ileus and poisoning by the yellow iodide of mercury.

Dynamic Ileus.—Since the classical article on ileus, published by Dr. Jno. B. Murphy (in the *Journal of the American Medical Association*) in 1896, several cases of death due to dynamic ileus have been reported, but little of essential value has been added to the knowledge of the subject.

This condition has been observed so rarely that many able surgeons have even doubted its existence, asserting that the contraction of the intestine occurred after death. From that opinion I must dissent. I am aware that post-mortem contraction of the intestine does occur; I have observed it several times. I feel equally sure, however, that dynamic ileus may occur during life and be largely responsible for death. It was my privilege to observe Dr. Werder's case throughout, having assisted in the operation, seen the patient constantly during her illness, and witnessed the autopsy two hours after death. Though this case has been published in detail, I take the liberty of giving a synopsis here.

Mrs. W., 35 years old. The right tube, containing a small round cell sarcoma the size of a cherry, and the cystic right ovary were removed without incident. For the first five days convalescence was perfectly normal—she was reading the daily papers and asked permission to sit up. Following an egg-nog she had griping pain

in the intestines. Typical symptoms of almost complete intestinal obstruction, very slight distension, excessive peristalsis and marked circulatory disturbance gradually developed and continued until death, seven days after the onset of symptoms and twelve days after operation. The only improvement that occurred followed a dose of morphine given for pain. In view of the post-mortem findings the morphine probably caused the improvement. At autopsy, two hours after death, twenty-two inches of the ileum and the entire large intestine were firmly contracted, the ileum having an outside diameter of one centimeter, and the colon being exactly the size of my thumb. No other lesion was found, except a small sheet adhesion to the intestine which in no way constricted its lumen.

Yellow Iodide of Mercury Poisoning.—Formerly it was not unusual to employ iodoform gauze for draining, or more accurately, plugging, in cases especially liable to develop localized peritonitis. This was done in one of our cases in 1896. The peritonitis developed on the third day, calomel was given, a grain every hour for seven doses. In twenty-four hours she had, to our amazement, twenty bloody stools, accompanied by marked tenesmus. Fortunately she recovered. Iodides were found in the urine and saliva. She had been absorbing iodine from the surgical dressing and eliminating it into the bowel as iodides and iodates. The calomel combined with it, giving the yellow iodide of mercury in toxic dose. Since then we have rarely used iodoform gauze in any way.

2. ALIMENTARY COMPLICATIONS DUE TO LOCAL OR GENERAL PERITONITIS.

The nature of these complications is so generally and so thoroughly understood that the merest reference would almost seem unpardonable. Yet I cannot refrain from adding my testimony to the prophylactic value of deferred operation for the removal of the products of inflammation, involving the uterine appendages.

It has been my privilege to observe abdominal work at a time when it was customary to remove pus tubes during the acute attack. At that time the mortality from such operations exceeded 10 per cent.; drainage was usual, adhesions and hernia frequent; fecal fistulæ were not rare; and localized peritonitis left products more serious than those removed.

In common with most of you, I am unalterably opposed to

choosing the acute attack as the elective period for removing inflammatory products of the uterine appendages. My reasons are briefly as follows:

1. In a series of approximately 3,000 cases of inflammation, of tubal origin, the disease has had a mortality of less than 0.5 per cent., if we exclude those cases of streptococcic infection occurring after the pregnant uterus has been emptied and in which nature has made no effective attempt to barricade her lymphatic approaches. In those cases the infection quickly becomes systemic and in no sense should they be considered in this connection except to be excluded.

2. In a series of more than 230 consecutive abdominal sections done for the removal of the products of tubal infection, there have been only two deaths. In one instance death occurred eleven days after operation and was due to tuberculosis, with ulceration of the intestinal mucosa. In the other, death occurred in the fourth week, and was due to cerebral embolism following pneumonia.

3. In that entire series there has not been a single serious intestinal complication of any kind following operation, and remarkably few were found at the time operation was done.

4. If operation is habitually done during the acute attack, many ovaries, tubes, and uteri will be needlessly sacrificed.

In choosing the time of election for operation in these cases, it has been my custom to absolutely decline to operate until four essential facts were accomplished.

First, the patient's general health must be such that she has a good margin of reserve strength.

Second, there must be no cellular exudate. If one existed, it was nature's positive declaration that the offending structure contained a poison she was afraid to admit into her systemic circulation. When the need for its existence disappears an exudate is always absorbed. We can well afford to wait until that time.

Third, the temperature must be absolutely normal or lower for at least three weeks—at first an arbitrary period, which I think has proven to be the earliest uniformly safe time to operate.

Fourth, when the preceding conditions have been demonstrated to exist, a careful bimanual examination is made, and the temperature is taken every hour for four hours; if this slight traumatism causes a rise of temperature, we may be sure

the greater injury due to operation would be very likely to cause a serious inflammatory reaction.

I feel that I may speak with confidence regarding the prophylactic value of these tests. By way of defining the limit of application of these remarks, however, let me say that delay is not advised where pus is easily accessible for evacuation, and in a few other types of cases in which sound surgical judgment may lead one to operate earlier.

STRUCTURAL CHANGES.

Intestinal Adhesions.—It has been said that adhesions constitute the opprobrium of abdominal surgery. The truth of that saying rests upon the fact that they might usually just as well have been prevented, if surgical judgment were always good.

During the course of abdominal operations we should constantly bear in mind the fact that nature's method of protecting herself against offending objects within the abdominal cavity is to wall them off by adhesions. We should further remember that she does not discriminate between the offending objects we make or leave and those originally there. It is, therefore, imperative that we should not introduce infectious material into the abdominal cavity. It is equally imperative and equally feasible that where an infectious focus exists within the pelvis, the pus should be rendered innocuous by internal sterilization before we run the risk of soiling clean structures with it.

By preventing peritonitis the judicious choice of time for operation constitutes one of the most important prophylactic measures in connection with intestinal adhesions.

Of scarcely less importance are the covering of all raw surfaces and the checking of all oozing, in clean cases as well as septic ones.

Greig Smith long ago showed that raw and peritoneal surfaces adhere very quickly and firmly. The only legitimate inference is that all pedicles and all raw surfaces due to broken adhesions or other injury should be completely covered, thus leaving all exposed surfaces covered by healthy peritoneum.

Notwithstanding these well-known facts, while in London last summer I saw one of England's foremost surgeons remove three fibroid uteri in one afternoon. He was very dexterous. In each instance the abdomen was closed in less than twenty minutes from the first stroke of the knife. But he did not cover any of his pedicles. It would be interesting to know what percentage of his

patients require subsequent operations to correct the defects he causes.

We should further remember that blood clots are foreign bodies which nature attempts to get rid of by sealing or absorption.

We should never lose sight of the fact that drainage always produces adhesions and often hernia as well.

By demonstrating these facts beyond question, your President has perhaps done more than anyone else to reduce the frequency, extent and severity of adhesions, and to prevent the disastrous results consequent upon them.

The type and location of adhesions, and the nature of offending objects they conceal, have much to do with the inconvenience they cause, the need for relief, and the methods to be employed.

To illustrate: Mrs. McK. had a retroverted uterus and small cyst of the right ovary. She was operated upon by a noted surgeon of another state. He removed the right ovary and did a ventrofixation. His pedicle and fixation sutures and abdominal wound became infected. The small intestine became adherent to the pedicle with infected silk ligatures, forming the wall of a small abscess. The sigmoid was adherent to the uterus and interior of the hernial sac. In each instance the intestinal adhesion protected the peritoneum from septic invasion. The pain was so constant and severe as to require surgical relief. She made a structural and symptomatic recovery.

Mrs. W.'s appendix and cystic right ovary had been removed. The right ovarian pedicle was infected, and a knuckle of small intestine became adherent to it, forming the wall of an abscess. There was an incisional hernia. A band of omentum was adherent at one end to the fundus of the gall-bladder, and at the other to the abdominal incision. She had constant pain from the infected pedicle and variable pain, due to the intestine tugging on it. The gall-bladder became kinked at times, and typical colic without jaundice occurred. To add to her troubles she became pregnant, and at the third month I saw her for the first time, at the request of her family physician. The pedicle was covered, the intestine repaired, the gall-bladder freed, the cystic left ovary punctured and the hernia corrected.

She recovered, was relieved from her suffering, went to term, and gave birth to a healthy child without incident.

These cases are but types of many that come to us all, and teach this great lesson—either greater care must be used in choosing the

time and type of operation and the condition under which it is done, or else fewer people should be operated upon.

Intestinal Obstruction.—Mechanical obstruction of the intestines occurring after operation presents no distinctive clinical features, but may be recognized as readily as if it occurs in the ordinary course of life.

With the occurrence of obstruction within a few days after operation, I have had no personal experience, nor have I ever seen a case; I have seen, however, several cases of intestinal obstruction which occurred at varying periods of from one to ten years after operation. The two chief types are (1) those in which a broad surface of adhesion is followed by constipation, with difficult painful evacuation for a time, and finally by complete obstruction; and (2) those in which a knuckle of gut suddenly becomes incarcerated and strangulated by a band of adhesion, much in the same manner as in the case of an adherent appendix, Meckel's diverticulum or suspensory ligament following ventrosuspension.

Of the first variety the case of Miss W. is typical.

A solid sarcoma of the right ovary was removed by Dr. — in 1897—mass silkworm gut sutures alone were used. Convalescence was speedy and comfortable. From time to time she was annoyed by gas, experiencing dragging pain at one spot near and above the line of incision. Later she had occasional spells of griping, vomiting, localized pain, and great difficulty in inducing the bowels to move.

In August, 1901, three years after the original operation, I was asked to see her in one of these attacks. She was sent to the hospital, the abdomen opened and six inches of small intestine released from adhesion to the upper angle of incision and adjacent abdominal wall. She made an uninterrupted recovery, is comfortable and free from recurrence of her sarcoma, some nine years since the ovary was removed.

In the foregoing types of intestinal obstruction adhesions have caused the trouble.

There is another type, however, in which the obstruction is due to the deliberate production of conditions favorable for internal strangulation. Though relatively infrequent, one may find in literature hundreds of recorded cases of intestinal obstruction due to Meckel's diverticulum or to an appendix adherent at its tip.

Ventrosuspension and the Gilliam operation upon the round ligaments produce bands of adhesions which stretch across the

free peritoneal cavity and are equally liable to cause internal strangulation.

Though I have knowledge of only seventeen cases of intestinal obstruction directly due to the suspensory ligament, I cannot but feel that many more cases will come to light during the next decade.

Fecal Fistula.—My personal observation and experience lead me to believe that the choice of time and type of operation will have much to do with the production or prevention of post-operative fecal fistula.

During the time when it was customary to remove acutely inflamed uterine appendages, it was not unusual to find adherent intestines, the walls of which were infiltrated, soft, friable, and easily torn. They were not flexible, sutures readily tore out, and repair was correspondingly difficult and unsatisfactory. It was then customary also to drain. As a result of this unfortunate combination of circumstances, fecal fistulæ occurred in a very definite percentage of cases. On the other hand, if operation has been deferred until such time that the exudate in the intestinal wall has been absorbed and the gut is practically normal, an injury is less liable to occur, and is much more easily and successfully repaired.

By a strict observance of these principles it has been my good fortune not to have a single fecal fistula in my last series of more than 600 consecutive abdominal sections.

Indeed, one may occasionally succeed beyond all reasonable expectation if he persists in his efforts to restore the local structures as nearly to the normal as possible, prior to operation.

Permit me here to cite a case in point: Miss V. had for many months been discharging horribly offensive pus from the bowel each day. She was seen by Dr. Jno. A. Lichty, who referred her to me, because of an infected cyst five inches in diameter, which communicated with the rectum by an opening about four inches above the anal orifice. She was sent to the hospital, and the bowel washed daily with normal salt solution for a period of six weeks. Fortunately the communication between the cyst and rectum closed. The treatment was continued until we were reasonably sure the cyst could be removed without injury to the rectum. It was shelled out from its bed of adhesions. The rectum had so far recovered that after a careful search we failed to find the site of the previous opening.

Though the cyst contained about a quart of horribly offensive pus, similar in all respects to that which had been discharged by the rectum, recovery was prompt and complete except for a slight stitch infection. That was directly attributable to the pus, which was found to be teeming with virulent staphylococci.

It is my firm conviction that operation during the existence of the communication would at least have resulted in a fecal fistula, or more probably in death from septic peritonitis.

I am convinced that many of the more serious cases of pelvic inflammation run less risk of serious intestinal complications if, with preliminary treatment, the surgeon disregards the element of time.

In this way, by careful treatment, one may readily improve local conditions, and so far restore the strength of his patient that operation may be deliberate and complete rather than a hasty makeshift.

Thrombosis and Embolism.—So much experimental work has been done and as much has been written regarding injuries to the intestinal blood supply, that time and occasion forbid a detailed reference to the principles involved in thrombosis and embolism of mesenteric vessels. Clinically two types are met with. In one the occlusion is directly dependent upon violence done to the intestine or mesentery, while in the other type no such injury has occurred.

Of the first class, the following case is illustrative:

Mrs. — was attended by a midwife and seen later by a physician. She had been in labor for fourteen hours, the child having been delivered instrumentally before she entered the hospital. The uterus had been ruptured. Twenty-odd inches of intestine had been stripped from its mesentery, and protruded into the vagina. The abdomen was immediately opened, the ruptured uterus removed, the intestine resected, six inches or more having been removed above and below what appeared to be the limits of the injury. The patient's pulse promptly fell below 100 and remained so some forty-eight hours. During that time her condition was so good as to make us feel she was about out of danger. Suddenly she complained of severe pain in the abdomen. Vomiting began and gradually became excessive and projectile. The abdomen became distended; peristalsis was constant, but slight and ineffectual. The pulse grew rapid, the superficial veins contracted, the surface pinched and cyanotic. She died on the fourth

day. Autopsy showed no peritonitis or other pathological lesion except gangrene of the gut, two or three inches on each side of the anastomosis; it was due to thrombosis of the mesenteric vessels.

Perhaps a more frequent risk of injury is incurred where a neoplasm, especially an ovarian cyst, is so firmly adherent to the mesentery that complete separation is impossible if the integrity of the blood supply is to be preserved. In such cases the lesser evil is chosen by allowing a portion of the cyst wall to remain.

The writer has had no personal experience with cases in which thrombosis or embolism has occurred in uninjured mesenteric vessels. Such cases have been reported by Maylard, Oberembt (Thienbaus), and Elliot. Elliot was particularly fortunate in that his three cases were recognized, the gangrenous intestine resected and all recovered.

Acute Dilatation of the Stomach.—In 1902 Campbell Thompson reviewed the literature and found record of but forty-four cases of acute dilatation of the stomach, only six of which occurred after abdominal operations. Since that time—that is, during the last five years—more than eighty additional cases have been reported, forty of which followed abdominal (including kidney) operations. The gravity of the affection is probably overstated by the recorded cases. Thus, of one hundred and twenty-four cases reported to date, eighty-six have died, apparently yielding a mortality of 69 per cent. It is evident, however, that only the most striking examples have been reported. Doubtless a much larger number of mild cases have recovered and passed unnoticed. Many others have been recognized but not published.

Thus Halstead says, "There undoubtedly exist minor degrees of dilatation that speedily recover spontaneously, or yield to medical treatment." Doubtless, also, many of the fatal cases would have yielded to prompt and appropriate treatment. This opinion would seem amply justified by the favorable termination in cases reported by Mownihan, Robeson, Herrick, Schnitzer, Baumler, Müller, and Walzburg.

Etiology.—Injuries, especially those involving the central nervous system, diseases and deformities of the spinal column, wasting diseases, or operations, abdominal and otherwise, have preceded acute dilatation of the stomach in the vast majority of reported cases. Each has been looked upon as bearing some etiological relation to the disease.

The most hopeful idea advanced, however, is that of Rokitsky (1863), elaborated by Kundrat (1891), and more recently

acted upon by many observers, who have been able to record recoveries, where death might reasonably have been expected. This view attributes acute dilatation of the stomach to a sudden mechanical obstruction of the intestine. The duodenum is the usual seat. Obstruction occurs where the superior mesenteric artery crosses the duodenum, and is supposed to be caused by compression of the gut between the mesentery and spinal column.

According to Connell, the first recovery due to treatment directed to the relief of this supposed duodenal compression was recorded by Schnitzler in 1895. Since that time the disease has many times yielded to prompt and appropriate treatment.

The line of treatment which seems to have yielded the best results consists briefly in

(1) Such posture, inverted, turning on abdomen, knee-chest, etc., as will tend to release mesenteric tension and compression.

(2) Washing the stomach and permitting the gas to escape.

(3) Keeping the stomach empty.

(4) Administration of needed food and stimulation by rectum and beneath the skin.

So far as my reading goes, death has been the rule where surgical attempts at relief have been made. The stomach was opened in the cases of Brown, Box, and Wallace, Appel Hoffman, Kirch, and Wright; gastroenterostomy was done by Kehr and Korti. All nine of these patients died.

In a very considerable percentage of cases a mechanical cause does not seem adequate to explain the clinical course—indeed, autopsy has in many instances demonstrated an entire absence of mechanical obstruction.

I would submit that in regard to etiology in some of these cases we cannot disregard the following facts:

(1) In the nephritis of ordinary life, nature not infrequently attempts to eliminate waste products through the stomach. In such cases nausea may be intense and vomiting incessant until relief is given.

(2) In the cases of post-operative acute toxic hyperemia of the kidneys, nausea is intense and vomiting becomes incessant, until relief is given by unlocking renal and other secretions.

(3) In a very considerable number of recorded fatal cases of acute dilatation of the stomach, the kidneys have actually been operated upon; and in many other cases the definite statement

has been made that the urine was scant and loaded with albumin and casts.

In view of these facts, does it not seem at least reasonable:

(1) That nature is attempting, vicariously, to eliminate poisons by the stomach.

(2) That as the toxic material is most concentrated at the point of elimination, the stomach becomes poisoned, paralyzed, exhausted, and in some cases even dies, thus precipitating acute dilatation and sudden collapse.

(3) That the acute dilatation may in some instances be merely a terminal symptom of fatal toxemia, due to renal or hepatic insufficiency, the individual poison varying with the individual case.

(4) That treatment should be directed, not alone to the terminal symptom, but to the underlying cause as well.

It has been the writer's fortune to see, or at least to recognize, only one case of acute dilatation of the stomach.

The essential features of this case are:

A woman thirty-four years old had borne five children. I was told that while in a difficult sixth labor, her uterus was ruptured at 5 A.M., March 9th. She was sent to the hospital, arriving there at 7:45. At 8 the abdomen was opened. It contained the child, which weighed $9\frac{1}{2}$ pounds, a double uterus (the left uterus having been pregnant and ruptured), and a quart of blood-stained fluid. The placenta was still attached within the uterus. The child's feet were in the left broad ligament; its head was in contact with the stomach and spleen.

The uterus was quickly removed, the blood vessels were ligated, but the pedicles were not covered. The bloody fluid was mopped from the renal fossæ, the intestines being pushed from side to side to make that possible. The anteroposterior and transverse diameters of the abdominal cavity were found to be unusually great. The stomach was observed to be normal in all respects.

Iodoform gauze and tube drains were inserted into the vagina. A Miculicz drain (iodoform sac containing plain sterile gauze) was placed in the pelvis so as to shut off the uterine pedicle and torn broad ligament from the general peritoneal cavity. The patient was removed from the table forty minutes from the beginning of the operation. Her pulse at that time was 160. Three ounces of ether were used.

Clinical Course.—Because of the soiling and traumatism of the

abdominal viscera, the patient was put in the exaggerated Fowler position.

Emesis.—From the first—indeed, before the operation—she complained of intense thirst. Her tongue was dry. She did not vomit until 6:50 P.M. (ten hours after operation). A pint or more of bile-stained fluid was thrown up. Again at 8:30 like emesis occurred. This was continued at intervals until 11:30 P.M.

Urine.—She was catheterized at 6 P.M. and four ounces of urine gotten. It was concentrated, of a dirty brown color, and was loaded with albumin.

Circulation.—From the time of the operation until 11:30 P.M. (fifteen hours), the pulse reached as low as 130, but was usually recorded between 136 and 140.

Physical Examination.—When I saw the patient at 9 P.M., twelve hours after operation, the stomach showed as a dome-shaped protrusion above the surface of the abdomen, extending eight inches transversely, and reaching below the umbilicus. She was very restless and suffered considerable pain in the distended area. The lower abdomen was soft and flat. At 11:30 the stomach was more tense and larger. The discomfort, thirst, and vomiting were more pronounced. The stomach tube was passed. A pint or more of bile-stained fluid and great volumes of gas escaped. She expressed herself as being instantly greatly relieved. She was turned on her abdomen and the head of the bed considerably lowered.

After the lavage and change of posture, she ceased vomiting at once and no other emesis has occurred. Her pulse dropped progressively, reaching 98 in eight and one-half hours. (For fifteen hours it had practically remained at 136-140.) Renal secretion improved.

Her further convalescence was somewhat tedious, but progressive. Among her complications may be mentioned nephritis, mild iodoform poisoning, localized peritonitis, and pelvic cellulitis. Fortunately, her recovery was complete.

SIXTH STREET AND DUQUESNE WAY.

POST-OPERATIVE THROMBOSIS AND EMBOLISM.*

BY

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THROMBOSIS and embolism comprise so large a part of post-operative affections of the heart and blood-vessels that my paper shall be confined to them, including sepsis so far as it stands in intimate relation to these complications. This intimate relation is well known and not denied, for although infection is probably not the cause of the majority of the cases of post-operative thrombosis, it plays an important rôle in its causation, and thrombosis and embolism enter largely into the processes by which an infection is conveyed from one part of the body to another.

A thrombus has been defined as a solid mass or plug formed in the living heart or blood-vessel from the constituents of the blood. A thrombus formed from the circulating blood is at first parietal or mural, but by continued growth it may fill the vessel and thus become an occluding or obstructive thrombus. A primitive thrombus, caused by local conditions, may be the starting point of a continued thrombus, extending in the course of the thrombosed vessel and perhaps into communicating vessels. A secondary thrombus is one which starts from an embolus of thrombotic material.

Thrombi are called cardiac, arterial, venous, or capillary, according as they occupy one of these portions of the circulatory system.

The general causes of primary thrombosis are given as follows: A slowing or other disturbance of the blood current, changes in the vessel or heart wall, and changes in the constituents of the blood. The following classification, having as a basis the causation of thrombosis, has also been made:

1. Inflammatory thrombi, which are produced through acute or chronic inflammation of the wall of the heart or blood-vessels. As a consequence of the inflammation, the wall is thickened and the endothelium injured.

*Read before the Section on Gynecology, College of Physicians, Philadelphia, March 21, 1907.

2. Traumatic thrombi produced through injuries to the vessel wall. To this classification belong those thrombi caused by ligation, severing, or tearing of the vessel.

3. Compression or dilatation thrombi, which are caused by a slowing or stagnation of the blood stream. The compression can arise by the pressure of tumors, exudates, etc., and the dilatation may be due to actual disease, loss of elasticity, or excessive thinning of the vessel wall. Certain cardiac thrombi probably come under this head.

4. Marantic thrombi, which are due to diseased conditions of the blood, degeneration or weakness of the heart, and slowing of the blood stream.

It is difficult to estimate which of the factors in producing thrombosis is of greatest importance in causing the post-operative variety. The recent interesting and important work of Carrel and Guthrie on the anastomosis of blood-vessels and the transplantation of viscera would seem to show that infection and injury to the vessel wall are of primary importance. They found in their work upon animals that where their technique was rigid and the endothelium of the vessels was accurately adapted, thrombosis occurred but rarely. However, infection would not seem to be the most important element in the post-operative variety, which occurs much more frequently (no matter where the seat of operation is) in the veins of the lower extremity, especially the left one.

All of the causes just mentioned may act after operation to cause thrombosis of these vessels. It is a fact that thrombi are more likely to form after operations for myoma or carcinoma of the uterus and large ovarian tumors. In these cases the blood formation is interfered with by loss of appetite and general ill health, the nutrient material of the blood is utilized in supplying nutrition to the tumor; and in many cases large quantities of blood are lost both before and during operation. From these causes there is frequently in these patients marked anemia, the number of white blood corpuscles, blood platelets, and the amount of fibrin are relatively increased and the blood is thus apparently rendered more liable to coagulate. Schwab, however, in a recent article (*Münch. Med. Wochensch.*, Vol. III, No. 51) could find no relation between the amount of hemoglobin and the time of blood coagulation.

The factors of most importance, then, would seem to be injuries

and diseased conditions of the vessel walls, and a stagnation or slowing of the blood current. In many of the cases where the thrombosis is most likely to occur, the vessel wall is dilated or otherwise diseased, due to pressure of the tumors prior to operation and to pathological changes in the blood. The blood current is slowed, due to weakened or diseased heart, the recumbent position, the small amount of fluid ingested, the loss of blood, and the distance from the heart. Finally the increased frequency with which thrombi occur in the left leg can be explained by the passage of the left iliac vein beneath the rectum or sigmoid flexure of the colon and the right iliac artery. Owing to its greater length and its course obliquely across the posterior wall of the pelvis, this vessel is subjected to greater pressure and trauma before operation in cases of these large tumors, and as a consequence there is a greater liability of its walls becoming diseased. After operation the same influences (less the tumor) act, and consequently there is more likelihood of stagnation of the blood current in the left than in the right iliac vein.

It is interesting and important to know what finally becomes of the thrombi. They may soften or break down, become organized, or undergo calcification. The softenings are divided into simple or bland, septic or purulent, and putrid.

The simple softening is thought to be due to the action of a ferment, and the septic and putrid to the action of pyogenic and putrefactive bacteria respectively. These softenings may lead to the dislodgment of pieces of the thrombi, which are then known as emboli, and these are transported by the circulation to various parts of the body. When calcification occurs, phleboliths or arterioliths are formed. The organization of thrombi, *i.e.* the substitution for the thrombus of vascularized connective tissue, takes place in the majority of cases. The tissue which replaces the thrombus is derived from the wall of the blood-vessel, new blood-vessels springing from the vasavasorum, and the endothelium and connective tissue being derived from like cells in the vessel wall. Lacunar spaces lined with endothelium may form throughout the thrombus, the latter becoming gradually disintegrated and absorbed. The newly formed tissue becomes fibrous and contracts, and there may result a fibrous plug, a cavernous structure with blood spaces, or a restoration of the lumen of the vessel, with perhaps a few bands crossing it.

Embolism is defined as the impaction in some part of the vascular system of any undissolved material brought there by the blood current. The transported material is called an embolus. Emboli are usually derived from thrombi. Fat, air, and tumor cells may form the embolus, but these are of little importance in the post-operative variety. A thrombus from the systemic veins or right heart causes pulmonary embolism, except in those cases of crossed embolism, where the embolus passes through an open foramen ovale or where the embolus is stopped in the heart. When a piece of a thrombus is detached from the left side of the heart, the pulmonary veins, or the systemic arteries, the embolus lodges in a systemic artery. Finally, an embolus from the portal system of veins lodges in the liver.

As before stated, there is an intimate relation between sepsis and thrombosis and embolism. Post-operative cardiac disease is usually due to the action of bacteria which enter the blood current and produce endocarditis, pericarditis, and, at times, cardiac thrombi. The bacteria of wound infection and the gonococcus, the bacteria most frequently encountered in gynecological operations, cause a considerable proportion of the cases of acute endocarditis. The acute endocarditis thus set up is the thrombus from which, in certain cases, emboli of the post-operative variety are derived which lodge in the lungs, kidneys, spleen, mesenteric arteries, the brain, or arteries of the extremities.

Having briefly considered the subject of post-operative thrombosis, embolism, and sepsis as related to the two former, I will take up the various varieties.

LOWER EXTREMITIES.

I will begin with the lower extremities, as thrombi occur much more frequently there after gynecological and abdominal operations.

Schenck (*N. Y. Med. Journal*, Sept. 6, 1902) states that after 7,130 gynecological operations at the Johns Hopkins Hospital there occurred 48 cases of thrombosis of the veins of the lower extremities. The operations included nearly all of the usual gynecological ones, but the affection occurred much more frequently after operations for the removal of fibroid tumors, ovarian cysts, and carcinoma of the cervix.

Albanus (*Beitr. Klin. Chir.*, XL) found that in 1,140 laparotomies in the new General Hospital at Hamburg-Eppendorf, there occurred 53 cases of recognized venous thrombosis, all but one

occurring either in the pelvic veins or the veins of the lower extremities.

The diseases for which the laparotomies were performed were as follows:

1. Carcinoma of the esophagus.....	1
2. Diseases of the stomach.....	8
(Carc., 6; ulcer, 1; and pyloric stenosis, 1.)	
3. Diseases of the appendix.....	10
4. Diseases of the large bowel (all carcinomas).....	3
5. Diseases of the liver with gall-bladder.....	7
(Liver abscess, 1; chronic icterus, 1; carc. of liver and gall-bladder, 1; diseases of the gall-bladder, 4.)	
6. Sub-diaphragmatic abscess.....	2
7. Ileus, 1; perforative peritonitis, 1; tuberc. peritonitis, 1; general carcinosis of perit., 1; sarcoma of the abdom. wall, 1; total.....	5
8. Diseases of the female genital tract.....	19
(Carc. of ovary, 3; carc. of uterus and ovaries, 1; carc. of uterus, 1; pyosalpinx, 5; ovarian cysts, 4; myoma uteri, 3; prolapsus uteri, 1; extrauterine pregnancy, 1.)	

Sonnenburg in a series of 1,000 operations for appendicitis observed 30 cases of thrombosis. These were distributed as follows:

Right leg	9
Left leg	6
Both legs	2
Portal vein	2
Inf. vena cava	1

Clark (*Univ. of Penna. Bull.*, July, 1902), in 3,000 laparotomies performed mainly for gynecological diseases, found 42 cases of femoral thrombosis. The diseases were as follows:

Myoma uteri	16
Cystoma ovarii	10
Retroflexio uteri (simple and adherent).....	5
Carcinoma uteri	5
Appendicitis	2
Salpingitis and peri-oophoritis	2
Floating kidney	1
Cancer of the pylorus.....	1

Except after operations for appendicitis, thrombosis of the femoral vein occurs oftener in the left leg. As before stated, the

frequency of thrombosis in the femoral veins and the greater number which occur in the left leg should, it would seem, offer some plausible explanation of the etiology of the condition. The only rational explanation of this relative frequency, then, would seem to be slowing and disturbance of the blood current, due to diseased heart, general weakness, pressure of the pelvic viscera (sigmoid, vessels, etc.), and to diseased endothelium of the veins prior to operation.

Thrombosis and embolism of the arteries of the lower extremities are of very infrequent occurrence following gynecological and abdominal operations.

The frequency with which thrombosis occurs in the ovarian vein is impossible to estimate, the symptoms being obscure, and unless an autopsy is done it generally escapes observation. My own impression, obtained from autopsies upon patients dying from post-operative pulmonary embolism, would make it of greater importance than is usually attributed to it. Lotheisen found in 66 cases of pulmonary embolism that the greater number (40) came from the veins of the lower extremity; and next in frequency were from the pelvic veins.

In the first 39 cases of femoral thrombosis which occurred in the gynecological wards of the Johns Hopkins Hospital the shortest time after operation when symptoms of the affection made their appearance was seven days, the longest twenty-eight days, the average time being sixteen days. I can find no satisfactory explanation why this delay in symptoms should occur, unless it is that it requires a considerable time for complete plugging of the vessel to be accomplished, the thrombus formation beginning as a parietal form and finally becoming an obliterating thrombus.

PORTAL VEIN.

Thrombosis and embolism of the portal vein and its branches probably occur much more frequently than is usually thought. After resection of the intestine, gastroenterostomy, operations for incarcerated hernia, appendicitis, volvulus, intussusception, and cholelithiasis, thrombosis of the mesenteric and portal veins undoubtedly not infrequently occurs. Unless a complete occlusion takes place, or the thrombotic or embolic process is of the septic variety, it may readily escape notice. The portal vein, although a terminal vessel, has so abundant a capillary anastomosis that as a rule embolism or thrombosis of its hepatic terminals causes no interference with the circulation of the liver. The variety

which has been most frequently observed is septic pylephlebitis. A number of such cases have been reported; Gerster, in 1,189 cases of appendicitis, saw nine cases of this affection. Quinke (Nothnagel's Encyclopedia) considers as the cause of liver abscess, first, dysentery; second, appendicitis; and third, cholelithiasis. Langfeld, in 112 cases of appendicitis, saw pylephlebitis four times, while Fitz, in 257 cases, saw pylephlebitis and liver abscess eleven times. Hart, Sonnenburg, Bärensprung, Kelly, and numerous other writers report cases of the kind. The observations of Gussenhauer are interesting. He believes that most of the lung affections following incarcerated hernia are embolic in origin. As the mesenteric veins empty into the portal vein, most of the emboli must first lodge in the liver, and from this organ secondary emboli pass to the lungs. A few may pass through the anastomosis between the portal vein and the inferior vena cava, while very small emboli may possibly pass through the liver directly to the lungs. Certain thrombotic processes extend to the portal vein through its anastomosis with the pelvic veins. Gerster's observations may give a possible explanation of the absence of symptoms in many cases of portal and mesenteric thrombosis. He says, in speaking of septic pylephlebitis, "The primary thrombosis is seen extending gradually and continuously or in short intervals of space upward toward the center, rarely involving the entire circumference of the lower course of the portal vein, but more commonly forming laterally adherent thrombi, alongside of which the blood current may pass with little interruption."

We would expect in cases of thrombosis of the portal and mesenteric veins infarction of the intestine, and as this has been rarely observed in these cases, it must be that the occlusion is generally not complete. I can find but few instances of post-operative thrombosis of the mesenteric artery or vein, except those cases associated with appendicitis. Delatour reports a case of venous thrombosis following splenectomy, and Mayland one, after gastrojejunostomy. Thrombosis of the hepatic artery is practically never recognized as a post-operative affection, although it must occur.

KIDNEY.

Thrombosis of the renal vessel following operation is very rarely recognized, but probably does occasionally occur. This

would be most likely to happen after resection of the kidney for tuberculosis, or incision through kidney substance for calculus. Embolism of the kidney, on the other hand, is much more frequent, being given by Ziemssen as occurring 57 out of 84 times in cases of peripheral embolism. Robinson says, "The general distribution of embolism following surgical operations is, relatively: (1) pulmonary, 70 per cent.; (2) renal, 12 per cent.; (3) splenic, 8 per cent.; (4) hepatic, 5 per cent.; (5) cerebral, 4 per cent.; (6) serous membranes (pleura peritoneum, joints, etc.), 30 per cent.

It is mainly due to the lodgment of emboli derived from the valves of the left heart and thrombi from the left heart and the aorta. By far the more common form of embolism is the septic or infective form. This is what we would expect, because in sepsis the heart, the chief seat of the source, is more apt to be involved. The lodgment of these infected emboli, which are usually of small size in the capillaries and smaller arteries, usually gives rise to metastatic abscesses and to acute suppurative nephritis. Where the emboli are small and are not infected, such slight and transient symptoms are produced that they escape recognition. Larger emboli, which plug the renal artery or its large branches, generally produce infarcts. The arteries are end arteries and the collateral circulation after their occlusion is very incomplete. The symptoms of an infarction of the kidney may readily escape notice unless the infarct be a large one or is infected. With large or numerous infarcts there is pain and tenderness over the kidney, with blood and hemoglobin in the urine. Where the emboli are infected, fever and other signs of sepsis are usually present and the urine may show changes indicating an acute suppurative process.

Israel, Simon, Johnson, Brewer, and others have emphasized the fact that in a large proportion of cases of hematogenous infections of the kidney, the lesion is unilateral, and give as a reason that there is a diminished resistance in that kidney as a result of a previous injury or disease, such as calculus, trauma, floating kidney, etc. This infection may, of course, take place without the occurrence of coarse emboli. Bacteria themselves may be transmitted in clumps and then be regarded as emboli, and the mere presence of pathogenic bacteria in the embolus does not necessarily impart to it infective properties. Welch says that he has seen in several instances in the spleen and kidney, only the mechanical bland effects

of emboli derived from the vegetation of an acute infective endocarditis, and has been able to demonstrate streptococci or other pathogenic organisms in the original vegetations and in the emboli.

SPLEEN.

From Litten's statistics emboli lodge not infrequently in the spleen, but very little can be found in the literature regarding post-operative thrombosis and embolism of the splenic vessels. Litten ranks splenic embolism with renal as the most frequent in the branches of the aorta. Ziemssen puts splenic embolism next to renal in his 84 cases, the number of cases being 39. Robinson gives it as constituting 8 per cent. of all post-operative cases. The symptoms are so indefinite unless infection is present that it may readily escape notice. The result of the lodgment of an embolus of considerable size is an infarction, and if the embolus is infective in nature or there is bacteriemia, an abscess is likely to result. The sources of the emboli are chiefly in the heart, either thrombosis of the cavities or more frequently endocarditis, which may result from the infection for which the operation is performed. Litten, in 35 cases of sepsis ending in death, found large tumors of the spleen without exception. Of these 35 cases, 14 of them had multiple abscess. He regarded these as the result of infarcts which were infected.

HEART.

The heart is the seat of thrombotic and embolic processes of the post-operative variety more frequently, perhaps, than is generally thought. As I have before stated, the vegetations of the cardiac valves are thrombi which are the chief source of embolism in the greater circulation. These are, perhaps always or nearly so, the result of infection. Thrombi form also in the cavities, especially the auricles, as a result of infection or a retarding of the blood current which results from chronic disease of either the valves, heart muscles, or a variety of chronic affections which produce cachexia or inanition. It is probable that the heart is the source of many of the post-operative pulmonary emboli whose origin cannot be discovered. A few cases of sudden blocking of the tricuspid or mitral orifice by an embolus have been reported. To me it seems remarkable that more emboli which eventually lodge in the pulmonaries do not stop, at least, temporarily in the heart. It is almost inconceivable that an embolus which will com-

pletely plug the pulmonary artery would pass through the heart without giving rise to well-marked symptoms, and it is possible that the high and irregular pulse which has been noted in many cases of femoral thrombosis may be due to small emboli passing through the heart.

Thrombosis and embolism of the coronary arteries may also occur, and should always be considered in looking for the cause of sudden death.

LUNGS.

The opinion is steadily gaining ground that a large part of the post-operative pulmonary complications are due to embolism. While a resident at the Johns Hopkins Hospital my attention was attracted by observations of cases and the study of our case histories to the relation existing between so-called pleurisies and thrombosis of the peripheral vessels, and I became convinced that the majority of cases which were diagnosed pleurisy were really pulmonary infarcts. In 1902 I published in *American Medicine* a paper upon this subject. Sonnenburg (*Verhand. Deutsch. Gesell. Chir.*, Berlin, 1902) says that after laparotomies there occur inflammatory processes which have few symptoms and which can be defined only by careful observation and physical examination. In other cases the inflammatory processes are widespread pneumonic infiltrates which lie usually in the lower lobes, take the form of a severe pleurisy, or finally become localized lobular areas. In the course of years of observation he has come to the conclusion that most of these lung complications are of embolic origin. Albanus, who in 1,140 laparotomies saw 2 per cent. of recognized pulmonary embolism, found that at autopsies performed upon patients who during life had showed no symptoms of thrombosis, in many cases either a fresh lung embolus to be the cause of death, or where death was due to some other disease, a small pulmonary embolus or a pulmonary infarct, due to an embolus which had occurred after operation. I am certain that the statistics as to the frequency of this complication are much too low. However, Gebele, in 1,196 laparotomies, reported 14 cases of pulmonary embolism, Albanus found 2 per cent., Burkhardt in 236 myoma operations saw 12 cases, Pietrzikowski in 210 cases of incarcerated hernia saw 14 cases of what he considered to be pulmonary infarct. Byron Robinson reckons that 70 per cent. of all cases of post-operative embolism occur in the lungs. I believe I

am safe in asserting that with the technique practised to-day by our better surgeons, more deaths occur as a result of pulmonary embolism than any other one cause in operations for the removal of fibroid tumors and ovarian cysts. The origin of the embolus is usually a thrombus in the veins of the pelvis or lower extremity. The next most frequent source is probably the right heart, while any of the systemic or the portal system of veins may be the origin of the trouble. Being a result in a large majority of cases of thrombosis of the pelvic or femoral veins, it occurs more frequently, after operations for tumors of the uterus and ovaries in, strictly gynecological cases, while after operations upon the intestinal tract (including incarcerated hernia and appendicitis), the proportion of cases is large. Thrombosis of the pulmonary vessels occurs after operation, the majority of them being secondary to an embolus, while in a few cases the thrombosis may be the source of an embolus which plugs a small vessel.

BRAIN.

Embolism and thrombosis of the vessels of the brain are apparently rare complications of gynecological operations. Byron Robinson states that 4 per cent. of cases of post-operative embolism are cerebral. In my own experience I have encountered but two cases which I regarded as such. One occurred after a myoma operation, the embolus lodging probably in the left middle cerebral artery, producing transient hemiplegia and aphasia. The other case followed a curettage for retained secundines, and occurred in the retina. Byron Robinson also reports several cases in which he thinks from the symptoms that the embolism occurred into the floor of the fourth ventricle. I have been unable to find satisfactory statistics regarding these affections, but undoubtedly like other forms of these affections they are most likely to be the result of diseases of the heart and blood-vessels.

COMPLICATIONS ARISING IN THE KIDNEYS AND
URETERS FOLLOWING ABDOMINAL OPERATIONS.*

BY

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THE consideration of complications arising in the kidneys and ureters introduces for discussion a subject which is broad and far-reaching. Among the many complications which may follow operations within the abdomen or pelvis there are few, if any, more important and none that occur more frequently or demand more careful consideration than those connected with the urinary tract. In this paper I shall consider the more important phases of the following conditions: Irritation of the kidneys, pyelitis, ligation, and necrosis of the ureter.

Irritation of the Kidneys.—This condition is due to the anesthetic and to the shock of the operation which, by diminishing function in all the emunctories, allows toxins, or waste products, to accumulate within the body, and these, when eliminated, produce irritation of the kidneys. The degree of the irritation is modified by the age and general condition of the patient, the nature of the operation, and by the character and amount of the anesthetic administered. Before a patient is given a general anesthetic the condition of the kidneys should be determined. Unless this precaution is taken many patients with nephritis, and occasionally a patient with a pyelitis, will be given an anesthetic, which in the majority of cases aggravates the lesion, at least temporarily, and in some cases causes collapse from toxemia during the performance of or immediately following the operations, or death a short time after the operations have been completed. Should the patient have nephritis prior to the operation the surgeon must choose the anesthetic which will cause the least disturbance. At the present time the statistics seem to be in favor of ether. Winderlick from his studies found casts in the urine after ether anesthesia in 24.6 per cent. and after chloroform in 34.8 per cent. of the cases.

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The condition is manifested by a diminution in the amount of urine which contains albumin, tube casts, and in some cases a few erythrocytes.

In a paper entitled "A Study of the Urinary Analysis of Operative Cases and the Treatment of Complications Arising from Kidney Insufficiency," I called attention to the importance of recording the total quantity of urine passed in each twenty-four hours and the making of a careful chemical and microscopical examination of specimens taken from the mixed quantity for several consecutive days. This is important because it was found that the urine varied at different periods, and by this method only could a functional diagnosis be made. Following operations it is of the utmost importance that the urine should be measured in order to determine to what extent the kidneys are functioning, and in operations within the pelvis where it is often necessary to place ligatures about the region of the ureters, by considering the amount of urine passed the surgeon is frequently put upon his guard to consider the possibility of an ureter having been ligated, and in other cases where there is an injury to the ureter or to the bladder it may be of some assistance in determining whether or not there is a leakage from the urinary tract. In the study of the urinary analysis of 228 gynecological cases subjected to operation, it was found that of 123 patients upon whom a celiotomy was performed 46, or 37 per cent. of the number, suffered from some change in the kidneys. Kelly, in 200 cases following abdominal operations, found casts in 30, or 15 per cent. From these figures it will be seen that irritation of the kidneys is a common complication following abdominal operations. Fortunately, however, in the majority of cases the condition is transitory, and under appropriate treatment clears up on an average of about six days.

I wish to call attention to the fact that patients who suffer from renal insufficiency often develop symptoms similar to those of peritonitis. The condition, I believe, is due to diminished peristalsis caused by the waste products in the body. This diminution of the peristaltic action allows fermentation to take place which causes distention of the bowels and reflex vomiting the same as is seen in cases of true peritonitis. The condition resembles certain cases of uremia, described by Osler, in which the symptoms are chiefly in the gastrointestinal tract; as soon as the urine indicates that the kidneys are acting normally and the poison has

been eliminated these symptoms disappear. In other cases simulating peritonitis, if free bowel movements be secured and the poison eliminated in this way, the casts and albumin disappear from the urine; and in some of these cases where the irritation of the kidneys is marked considerable difficulty is experienced in securing free bowel movements.

The treatment for irritation of the kidneys following operations is to stimulate the emunctories and to dilute the poison to be eliminated. To accomplish this the patient should be placed between blankets; hot water bags should be applied to the region of the kidneys; salt solution should be given by the bowel every six hours, and liquids and purgatives by the mouth as soon as the stomach is retentive. When the quantity of urine passed is small and casts are numerous, hypodermoclysis should be repeated as often as is necessary to maintain the quantity of urine equal to that passed by the average ether patient.

During the last year all patients who have been subjected to abdominal operations, immediately upon being returned to bed, have been given, unless there was some contraindication, two or three liters of salt solution by the bowel. Since this treatment has been adopted it has been found that the quantity of urine passed in the first twenty-four hours has been decidedly increased, that cases of irritation of the kidneys have been observed less frequently, and that the degree of the irritation has been less marked. I believe the improvement from this treatment is due to the greater dilution of the poison, thus causing less irritation. When a large quantity of salt solution is used it should be introduced into the bowel by a slow, continuous flow, as is obtained by using a fountain syringe elevated only a few inches above the level of the body.

In cases of suppression of urine, besides the treatment mentioned, spartein sulphate in doses of 0.065 to 0.130, as recommended by McGuire, should be given hypodermatically at intervals of four to six hours. In cases of acute suppression due to congestion and edema of the kidneys, decapsulation of the organs may be beneficial.

Pyelitis.—An acute pyelitis, or inflammation of the pelvis of the kidney, is a condition which develops in a few cases after abdominal operations, and is due in the majority of cases to an ascending infection. It may, however, be due to an acute systemic infection, or to the extension of an inflammatory condition in

close proximity to the kidney by contiguity. In order to lessen the frequency of this condition, every precaution should be taken to prevent an infection of the bladder. Some patients are not catheterized after operations and there are apparently no symptoms of a cystitis, yet these patients sometimes develop a pyelitis. It is the rule of most surgeons to have the patients catheterized immediately before operations, and it is probable that infection is carried into the bladder at this time. One of the great problems before us to solve is how to catheterize a patient without infecting the bladder. Until this question is settled patients will have cystitis and pyelitis and will suffer with the distressing symptoms which accompany these conditions.

A pyelitis develops in from one to six weeks after the operation and often begins with a chill, followed by a rise of temperature from 102° F. to 105° F., a rapid, weak pulse, prostration, nausea, headache, and restlessness. The patient complains of pain and discomfort in the region of the kidney. Upon examination the kidney will be found enlarged and tender. The urine at first may be clear, but becomes turbid and usually contains a large quantity of pus, and a number of mucoid and epithelial cells. The urine as a rule is acid. If it remains any time in the bladder it becomes ammoniacal. When irritability of the bladder is present micturition is usually frequent.

I have seen three cases of acute pyelitis follow operations within the abdomen. One patient who had an operation for an extensive inflammatory condition in the pelvis, with involvement of the vermiform appendix, was extremely ill after the operation, was catheterized for several days, and developed a severe cystitis. The cystitis had practically disappeared and she left the hospital in apparently good condition at the end of four weeks. Two weeks later she was taken with a chill, followed by a rise of temperature to 103° F., and the following day to 105° F. She complained of pain and discomfort in the region of the right kidney and irritability of the bladder, with frequent micturition. Upon examination the kidney was found moderately movable, swollen, and tender. The urine at first was turbid and a few days later was loaded with pus. At the end of three weeks all evidence of the pyelitis had disappeared and there has been no further trouble with the kidney. In the second case the operation was a hysterectomy. The patient was catheterized before and a few times after operation, but at no time were there symp-

toms of a cystitis and the urine was normal. Five weeks after the operation she developed a pyelitis in a freely movable right kidney. The symptoms in this case and in the one to follow were similar to those of the first case and will not be described. The amount of pus in the urine was small at first, but increased greatly in a few days. The patient recovered in about two weeks and has since remained well. She suffers, however, with a dragging sensation in the side, probably due to the movable kidney; the urine has remained free from pus. In the third case the patient developed a pyelitis on the right side two weeks after a simple abdominal operation. She was catheterized immediately before but not after operation. The symptoms cleared up in about ten days and the urine has remained free from pus. At times she suffers with discomfort in the region of the kidney.

The early diagnosis of acute pyelitis is of the utmost importance and as a rule is made without difficulty. The pain and tenderness in the region of the kidney, the marked elevation of temperature, the prostration, and the pus, mucoid, and epithelial cells in the urine should make the diagnosis reasonably certain. If an early diagnosis be made and appropriate treatment instituted, the prognosis should be fairly good. Should a diagnosis be not made, the condition may progress and develop into a pyelonephritis or into an abscess, with destruction of the kidney.

The treatment of acute pyelitis should begin by placing the patient at absolute rest in bed. Icebags should be applied to the region of the kidney. The most important part of the treatment is to flush out the kidney, and this is accomplished by drinking large quantities of water. The amount of pus in the urine increases as soon as the water washes out the kidney, and at this time the high temperature begins to subside. Phenyl salicylate and hexamethylenamine are recommended and usually used, but their value is doubtful. The improvement is due largely to the rest in bed and to the large quantity of water. The prostration in these cases is usually marked and the patients should be given supporting treatment and appropriate diet. The bladder should be irrigated daily with a solution of boric acid followed on alternate days by a solution of one of the silver salts. This is for two purposes: 1, To cure the cystitis which is usually present; and 2, as a prophylactic for the other kidney. When the symptoms progress under medical treatment the kidney should be incised and drained.

Ligation of ureter.—During operation for intraligamentous tumors, for inflammatory conditions with extensive adhesions, and more especially for carcinoma, the ureter may be ligated. This can usually be avoided by placing the ligatures close to the side of the uterus. When it is necessary to place ligatures in the immediate neighborhood of the ureters the accident can be avoided if the ureters be found at the brim of the pelvis and followed down to their entrance into the bladder. In tracing an ureter it is better to push the tissues away from the ureter and not the ureter away from the tissues, as care must be taken to preserve the periureteral arterial plexus and also the ureteral sheath.

The sudden blocking of a ureter, as by a ligature, usually produces agonizing pain along its course, extending into the kidney, accompanied by restlessness, a hot, dry skin, fever, rapid, weak pulse, and diminution of urine. When such symptoms are present following an operation within the abdomen or pelvis there should be little doubt as to the true nature of the trouble. In cases where the diagnosis is not certain, the inability to pass the ureteral catheter except for a short distance, and the failure of urine to pass through the catheter, should settle all doubt as to the true condition. Should both ureters be ligated the symptoms will be bilateral and there will be anuria. Occasionally the ligation of an ureter will be followed by no symptoms, and in such a case the accident will probably not be discovered. Noble reported a case in which the ligation of an ureter was followed by no symptoms. The accident was discovered at autopsy.

Should a ureter be severely injured during an operation and the condition of the patient such that time cannot be taken to repair the damage, it may be ligated without serious harm to the patient, providing the other kidney is normal. The symptoms on the affected side will soon disappear, as the kidney will become atrophied from backward pressure of the urine. Von Rostorn has deliberately ligated the ureter on several occasions without any disadvantage to the patient, when operating for carcinoma cervicis uteri.

The treatment for ligation of a ureter is to remove the ligature or ligatures.

Necrosis of ureter.—Necrosis of the ureter is a complication which follows in a certain percentage of abdomino-pelvic operations. The condition is most likely to occur in cases of carcinoma

where a wide dissection is made and the ureter is injured or its blood supply disturbed. It may follow when a ligature is passed, by means of a sharp needle, through the side of the ureter, when the ureter is accidentally crushed in the bite of a clamp, or when cooked by the electrothermic clamp. Noble reported ten cases of panhysterectomy in which the electrothermic clamp was used. In three cases, 33.3 per cent., the operations were followed by fistulæ, all of which healed spontaneously in two and a half, five, and nine months respectively.

Sampson, from his experiments on the blood supply of the ureter, found that the ureter could be freed throughout its length, from bladder to kidney, and that a necrosis would not follow providing the periureteral arterial plexus was not injured. Wertheim states that in his radical abdominal operation for carcinoma cervicis uteri the lower pelvic portion of the ureter should not be separated from the tissues along its outer side. By following this technique there was only one case of necrosis of the ureter in his last fifty radical abdominal operations for carcinoma cervicis uteri. Before this precaution was taken he had five cases of necrosis following thirty radical operations.

Nearly all cases of necrosis follow operations for carcinoma and are situated near the distal end of the ureter, and result in uretero-vaginal fistulæ. In cases of intraligamentous tumors and extensive inflammatory conditions, where the ureter is injured higher up, the accident is usually discovered and the ureter repaired at time of operation.

The time at which the leakage from the lower end of the ureter begins will depend upon the nature and the extent of the injury. The diminished amount of urine passing through the bladder and the leakage of urine from the vagina should make the diagnosis easy. On the other hand, the diagnosis of the exact location of the fistula is usually difficult. Should the leakage take place within the peritoneal cavity the signs of ascites would develop with or without the symptoms of a peritonitis, depending upon whether or not the urine was sterile. In such a case the amount of urine passed would be diminished and the distention of the abdomen would be progressive. Quick reported a case of traumatic rupture of the bladder in which all the urine leaked into the peritoneal cavity. At operation, eleven days after the accident, there was no evidence of peritonitis.

In cases of necrosis, where the fistulæ do not heal sponta-

neously, after the exudate is absorbed from the pelvis, an operation should be undertaken to remedy the defect. In some cases the continuity of the ureter may be restored by a plastic operation. In other cases it will be necessary to make a uretero-vesical anastomosis. In injuries low down in the pelvis a uretero-ureteral anastomosis is practically an impossibility. Should the ureter be injured higher up and a uretero-vesical anastomosis cannot be made without considerable tension, a trans-uretero-ureteral anastomosis, as suggested by Kelly and McMonagle, and performed experimentally upon dogs by Sharp, may be considered. When none of these procedures are practicable, as a last resort the ureter may be ligated or a nephrectomy performed. In no case should either of these last two procedures be carried out until it is known that the patient has a second kidney and until after the condition of the second kidney has been determined.

In closing I wish to state that I believe if the condition of the kidneys were studied more carefully prior to the operation, and if the ureters received more consideration during the time of the operation, there would be fewer complications to deal with.

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THE USE OF IODINE CATGUT IN ABDOMINAL SURGERY.

BY

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SINCE the era of clean surgery began the employment of absorbable suture material has largely superseded that which is not susceptible of absorption. Catgut is the material most used; but the difficulty of rendering it aseptic and its absorption before the tissues had united sufficiently firmly caused much annoyance and distrust in its efficacy. While I have never believed catgut, however prepared, is as good as kangaroo tendon, yet in large clinics obliged to economize financially, it has seemed necessary to consider the fact that catgut is the less expensive, and for that reason I have used it largely in my work. For several years I have practically used no suture materials other than the two mentioned. Catgut has been subjected to many processes to obviate these two inherent defects. Chromic acid has overcome the feature of too early absorption, even to the opposite extreme. We find chromic acid processes in use calculated to cause the absorption to be delayed a certain number of days. The accuracy of this process is, of course, but relative, as different cells have differing degrees of activity and therefore the period of absorption will correspondingly vary in different tissues. Moreover, we find catgut thus treated remaining intact for months, sometimes to the annoyance of both patient and surgeon. Very strong iodine preparations

have given rise to the same vexation. Many of the processes of sterilization have so weakened the catgut as to render it uncertain in tensile strength and an unnecessarily expensive material. In addition they have been very tedious and susceptible of failure owing to the much handling they entailed.

As the preparation of suture material is for many reasons left to hospital internes or employees it seemed that some simple process of sterilization and treatment to make absorption in the tissues occur a proper length of time after its introduction into them was very important. Various experiments have been made to that end. In my judgment, the use of iodine and alcohol has proven the most satisfactory.

Since 1896 I have been using kangaroo tendon prepared by H. O. Marcy, of Boston, in the fascia, in trachelorrhaphy, perineorrhaphy and nephropexy. Catgut was employed for all other purposes and ligatures. In March, 1904, I began using catgut prepared by a so-called iodine process. It has been modified according to the following statement of Miss E. Gilmer, the nurse in charge of the operating room at Columbia Hospital. The formula as now employed is:

Tincture of iodine, 1 per cent.

Potassium iodide, $1\frac{1}{2}$ per cent.

Absolute alcohol, $97\frac{1}{2}$ per cent.

A small amount of sterile water is used in dissolving the potassium iodide, just sufficient to make a clear solution.

Preparation.—The catgut is cut into desired lengths, wrapped into figure-of-eight or on glass spools and placed, without preliminary preparation, in the above solution. The solution and catgut are kept in a jar with a wide mouth, which is closed with an accurately-fitting glass stopper. The date is written on the label of the jar. It is allowed to stand for fourteen days, when it is ready for use.

Catgut prepared by this method has been found good and satisfactory after standing at least ten months (in solution). From March to June, 1904, we tried preparing the iodine catgut with sterile water instead of absolute alcohol, but this method was very unsatisfactory. Since June, 1904, the preparation made with absolute alcohol has been used.

Following the recommendation of Moschcowitz, of the Mount Sinai Hospital, of New York, to keep it dry, I have for several months had it removed from the solution as soon as fully prepared

and placed in small, dry, sterilized, airtight containers from which it is removed as needed for use. When removed from the container it receives absolutely no treatment before being used. Moschowitz (*Annals of Surgery*, 1905, XLII, 321-351), in his very exhaustive article, has described the experiments he made to test its sterility, its germicidal action on the tissues, and its tensile strength as compared with the von Bergmann method of preparation and with raw catgut. He made sixteen experiments to discover whether it was sterile, thirty-two to show the effect of the catgut on growing cultures, and twenty to show the effects of infected catgut. He prepared it as follows: The catgut, just as it was purchased from the dealers, was loosely wound, preferably in a single layer, on the spool, and tied at both ends to prevent ravelling. It was then immersed eight days in a solution of iodine, one part; iodide of potassium, one part; and distilled water, one hundred parts. In these tests he became convinced that the iodine catgut prepared by this treatment was absolutely sterile, which was not his determination regarding von Bergmann's mercuric catgut. He found on agar-agar plates that colonies of bacterium coli, of staphylococcus aureus, of bacillus anthracis, of the bacillus subtilis and of streptococcus pyogenes would develop up to within about an inch from a piece of iodine catgut, but not within that zone. In the thirty-two experiments made for the purpose of studying this one point he had uniformly positive results. He also noted that the von Bergmann corrosive sublimate catgut would have a zone immunity around it of about one-fourth the area of that of the iodine catgut. According to Bookman (vide Moschowitz, page 329), one yard of No. 1 catgut, prepared by the von Bergmann method, contained an amount of mercury equivalent to 0.008825 grams of mercuric chloride. In a specimen of catgut of precisely the same length and size treated by the iodine process he found 0.025737 grams of iodine. While in the case of the mercurialized catgut accuracy might be attained, yet with the iodized specimen allowance must be made for evaporation of the iodine, and therefore it is just possible the estimate is less than many similar specimens show. Moreover, catgut sizes vary so much that accuracy in such experiment cannot be considered real.

At any rate, the test shows beyond peradventure that the "halo of cleanliness" that was supposed to be a property of silver wire alone is possessed even to a higher degree by iodine catgut.

In a series of twenty experiments in which the prepared catgut was dipped in a twenty-four-hour culture of several different microorganisms no colonies appeared, showing the germicidal action of the iodine catgut when brought into contact with vigorous microorganisms.

At Columbia Hospital for Women, Dr. Carroll, U. S. Army, infected raw catgut for me with the bacillus anthracis and later subjected it to the iodine preparation I have mentioned. His experiments showed it to be positively sterile after treatment by the iodine and alcohol. In a series of over sixty experiments to decide upon the tensile strength of catgut, Moschcowitz found it was increased from ten to twenty per cent.

Its relative durability in the tissues has not precisely been determined, though, as I have mentioned, it may be converted by iodine into nearly permanent suture material. Dr. Delaney, of Alexandria, Va., four months after the insertion of a No. 2 catgut subcutaneous suture, in the closure of a median line, subumbilical incision, was obliged to remove it, and found it wiry. It had been prepared with a one per cent. solution of iodine, not the tincture. I have many times had cases that caused me some annoyance by their persistence in the tissues. I believe iodine can, as well as chromic acid, induce a slow absorption of catgut. Thus far I have mentioned nothing specifically of its value in abdominal surgery. In this field we have need of sutures of various sizes. The very fine, 0 or 00, is very efficient for intestinal and omental suturing as well as in ovarian and tubal resections. Many surgeons prefer for this fine silk or linen. While these may be absorbed in many instances, in many they are not, as I have found them encysted years after their insertion. Be this as it may, they surely are not absorbed as soon as properly prepared catgut and must be detrimental as foreign bodies so long as they remain. The tensile strength and resistance to absorption of iodine catgut is amply sufficient for the period of healing of the intestine, which is known to be but one or two days. Any suture material in the wound after this has been accomplished is detrimental. For operations on the kidney, liver, and bile ducts and spleen, No. 1 or No. 2 gives eminent satisfaction to me. In the ligation of bloodvessels in the abdomen No. 2 has been entirely reliable. In broad radical operation for cancer of the uterus I regularly employ it for ligation of the internal iliac arteries and in ordinary operations for removal of the uterus or appendages this size seems ample. In closing the incision in the

abdominal wall it is my custom to close by the tier method, using usually four layers of catgut, and for the one in the principal fascia Marcy's kangaroo tendon. The method seems to me nearly ideal. I have heard of catgut being blamed for the reopening of the wound a few days after operation, with expulsion of the intestines. This has occurred in but one case in my services, and in that one I had feared the efficiency of preparation of the catgut and a severe cough was a troublesome complication. Within the last few weeks some of my colleagues have reported cases in which silkworm gut sutures failed to prevent this accident. But a short time ago I was told by Dr. Clark, of the Government Hospital for the Insane, of an instance there of the same accident in the presence of silkworm gut. This accident does not seem such a strange one after considering that quite a considerable number of spontaneous ruptures of the abdomen in the absence of any previous operation has been reported. While it is a very unfortunate complication of abdominal surgery, I can readily understand that it may occur. I do not believe iodized catgut can justly be blamed for such an accident.

Of these points I am confident: (1) that catgut prepared by this iodine method is less apt to be contaminated than when it is prepared in other manners; (2) that it is sterile; (3) that while in the tissues it exercises a germicidal action against microorganisms; (4) that it has increased tensile strength and better resists absorption, a fault of catgut prepared by other methods; (5) that it is economical, as the waste is infinitesimal; and (6) that the preparation is much simpler and easier than any other with which I am acquainted.

"THE ROCHAMBEAU," 815 CONNECTICUT AVENUE.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of May 14, 1907.

The President, BROOKS H. WELLS, M.D., in the Chair.

In introducing the subject of the evening, DR. ALBERT H. ELY spoke of the

VARIETIES AND ETIOLOGY OF CYSTITIS IN WOMEN.

He said that until comparatively recently but little attention has been given to the diseases of the urinary system in women. The brilliant work of Dr. Kelly has stimulated effort in this field, and the more general employment of the endoscope and cystoscope, together with thorough urinary analysis, including bacteriology, has given us an accurate pathology and etiology of cystitis in women. Yet we still too often see, in the current literature on this subject, evidences of faulty diagnoses where the symptoms and not the diseases are described. As illustration, mention is made of "neuralgia of the bladder," "irritable bladder," "frequent and painful micturition from retroflexed and pressure from anteflexed uteri." True cystitis can be caused only by the presence of one or more pathogenic organisms. But there are other factors, which afford symptoms of dysuria and abnormal vesical function. Thus incontinence of urine, temporary or permanent, may follow injury to the urethra at parturition, or traumatic stricture of the urethra may result from the above and other causes. Retention of urine and dysuria following catheterization or operative interference upon adjacent parts are common. Only by direct examination can we eliminate the various pathological conditions of the urethra so often treated symptomatically as cystitis.

Too much emphasis cannot be laid upon the necessity for the most strict asepsis in the technique of all examinations, and in the catheterization of this most sensitive organ.

All of the above-mentioned conditions may be considered as factors predisposing to cystitis because they render the mucosa more vulnerable to pathogenic microorganisms. The urethra is naturally the most frequent and direct avenue of entrance to the bladder of pathogenic organisms.

Skene's ducts afford a habitat for bacteria which can easily be carried through the urethra into the bladder. Infection of the bladder may come also from the kidney when any of its anatomical structures are the seat of disease, or when organisms are eliminated by the kidney, especially the tubercle bacillus or the

typhoid bacillus, yet frequently neither at the time the patient is suffering from the disease nor later do these organisms cause infection of the bladder mucosa.

Four years ago, in a paper read before this Society, Dr. Ely gave the clinical histories of two severe cases of colon bacillus infection of the bladder in which the infection was from left tuboovarian abscesses. The organisms had passed through the tissues lying in continuity and not directly, as occurred in another case reported at that time, when a pyosalpinx had drained directly through a fistulous tract into the bladder. The gonococcus is probably the most frequent microorganism which finds its entrance through the urethra into the bladder. But the colon bacillus infects the bladder from the rectum and also through the blood and the lymphatics. Associated with foreign bodies in the bladder and kidneys the various forms of staphylococci and occasionally the streptococci are to be observed. In the classification of cystitis we can distinguish the types as clinical, anatomical, pathological, and bacteriological, or as is done so concisely by Kelly in combining the site, form, and pathogenic organisms for description of the particular lesion of the vesical mucosa. Thus we have a cystitis trigonitis (gonococcus); a cystitis posterior (tuberculosis), or a cystitis universalis (*Bacillus coli communis*). This classification has the distinctive merit of indicating the correct method of treatment by direct application to that part of the bladder where the disease is located and not irritating the entire mucosa, much of which may be absolutely normal. Senn's classification of cystitis subdivides the four general classes of anatomical, clinical, pathological, and bacteriological into these divisions: Anatomical (a), pericystitis, inflammation of the adjacent pelvic and abdominal viscera, which may extend to the peritoneum covering the fundus of the bladder and affecting usually the base and sides of the bladder, causing vesical hyperemia. (b) Paracystitis, inflammation of the subperitoneal connective tissue. Here abscess may occur. (c) Interstitial cystitis is located in the muscular coat of the bladder. Here also abscesses form which rupture into the bladder and are caused by infection through the lymphatics from disease of the uterus and its adnexa. Endocystitis refers to inflammation of the bladder mucosa, and primarily is limited to this in smaller or larger areas. This is the type usually referred to as cystitis; that is, a catarrhal inflammation of the lining of the bladder. It is in this type of inflammation of the bladder that so many predisposing causes exert their influence and render the membrane susceptible to the bacterial invasion. Senn's classification of cystitis, according to its pathology, is: 1. Suppurative cystitis in which not only the epithelial lining, but also the deeper tissues are involved, and the bacterial invasion is so severe that necrosis results and a large amount of pus is excreted. This form begins as acute inflammation and generally advances to a chronic form during which the process

extends to the ureters and the kidneys are likely to be attacked. 2. Ulcerative cystitis, that form in which the suppurative cystitis has been followed by one or more ulcers, and always suggests tubercular infection. These bacilli are to be found in the tissues removed by curettage. 3. Exfoliative cystitis, in which a part or the whole of the mucous membrane of the bladder is expelled. The principal causes are overdistention of the bladder and extreme pressure, as from retroflexion of a gravid uterus, protracted birth, and pelvic tumors. These affect the vesical blood supply and cause necrosis of the lining membrane with or without infection. Should infection occur we then have another form, that of 4, exudative cystitis.

In the bacteriological classification we assign the first place to cases of chronic cystitis from tubercular infection.

Kelly states that tubercular disease of the bladder in women is observed with a frequency which increases just in proportion as careful direct examinations and bacteriological investigations of the urine are made. It may be primary in the bladder, associated with a kidney lesion, or a part of a general tuberculosis. After the elimination of a gonorrheal infection, and bearing always in mind that gonorrheal and tuberculous infection not infrequently exist together, all cases of chronic cystitis in young unmarried women demand a thorough examination to confirm or disprove the diagnosis of tuberculous cystitis.

The cystitis caused by the colon bacillus varies greatly in the area affected, and shows a tendency to more or less chronic inflammation involving the whole bladder mucosa. It is this form of cystitis which frequently is not recognized post-partum when there have been the predisposing causes of pressure and hyperemia with retention of the urine, catheterization without strict asepsis of catheter, and when the nurse has energetically carried colon bacilli from the anus to the urethra in her efforts to render the parts sterile.

DR. HOWARD C. TAYLOR reported

SIX CASES OF SARCOMA OF THE UTERUS.

CASE I.—*Spindle-Cell Sarcoma of the Uterus*.—Mrs. L., aged thirty-one years, married for eleven years; three children, the last five years ago, and one miscarriage ten years ago. There had been no change in the menstrual history; she menstruated every twenty-eight days for three or four days, and moderately in amount. The patient complained of no pain, no discharge, and no disturbance of the bladder. There had been no loss of weight. The only symptoms of which the patient complained were the presence of the tumor and an indefinite sense of weakness. On examination the uterus was found enlarged to about the size of a six or seven months' pregnancy and very soft, and the vagina was blue. The examination so closely resembled that of pregnancy that the patient had been kept under observation for some time by her attending physician to exclude it.

A complete panhysterectomy was performed through the abdomen.

On examination of the specimen there were found one tumor about two inches in diameter that seemed to be a pure fibroma, and the microscopic examination confirmed this diagnosis, and also innumerable small tumors that were thought to be sarcoma because they merged with the surrounding tissue without a definite capsule as is usual in the case of fibroids. The microscopic examination of these small tumors showed them to be spindle cell sarcomata.

The patient made a smooth recovery from the operation.

CASE II.—*Polyloid Sarcomata of the Mucous Membrane of the Uterus*.—Mrs. P., aged fifty-nine years, married for twenty or thirty years, but had never been pregnant. Menopause fifteen years ago, previous menstrual history said to have been normal, and there had been no bleeding at all until about five months previous to the time that I saw the patient. During these five months the bleeding had been more or less continuous, but no other discharge. There had been little or no pain, no disturbance of the bowels or bladder, no loss of flesh or strength, and no cachexia. The one symptom, therefore, was the bleeding for the previous five months. Previous to my examination the patient had been curetted and the diagnosis of sarcoma of the uterus made from the curettings.

On examination the uterus was found to be enlarged up to the umbilicus, very soft, the cervix somewhat open. The patient not in good condition and had some temperature.

A complete hysterectomy was performed through the abdomen. The appendages were not removed. The patient died three days after the operation.

The examination of the specimen showed the uterus to be about the size of a seven months' pregnancy, the walls somewhat thickened, and the cavity absolutely filled with polypoid growths, varying in size from that of a walnut to that of a small orange. The microscopical examination proved them to be small celled sarcoma.

CASE III.—*Pedunculated Sarcoma of the Uterus*.—Miss N., aged thirty-seven, no children or miscarriages. Menstruation every twenty-eight days for three days, moderate in amount and without pain. There had been some pain in the abdomen near the umbilicus for the previous six months, but the pain was not constant or severe. There had been a slight discharge for some years and some dysuria. The patient had lost eight pounds in weight, but showed no signs of malignant disease.

At the operation I found a tumor six inches in diameter attached to the fundus of the uterus by a pedicle about an inch in diameter. As the tumor seemed to be a fibroma, it was removed, leaving the uterus.

The pathological report was that the growth was a sarcoma

of the uterus. Fourteen days after the first operation the uterus and appendages were removed through the vagina. The pathological report on the uterus was that there were a number of sarcomatous foci in the vicinity of the site from which the first tumor was removed. The physician of this patient reported to me that she died about nine months later of a growth in the abdomen which undoubtedly was a recurrence of the sarcoma.

CASE IV.—*Pedunculated Sarcoma of Uterus*.—Miss W., aged twenty-three years, not married, menstruated every twenty-eight days for two or three days, not profusely and without pain. One year previous to admission to hospital began to have pain in the left side of the abdomen and to notice increase in size of abdomen. A tumor, which at time of admission reached to margin of ribs, was first noticed on left side, but later became median.

Patient had lost considerable flesh and had constant abdominal pain.

On August 18, 1905, I opened the abdomen and removed a tumor weighing about fourteen pounds, which was attached to the fundus of the uterus by a pedicle about one inch in diameter. The uterus was not removed, as the tumor was considered to be a fibroma.

The pathological report was small spindle-cell sarcoma. Seventeen days later, when the patient seemed in condition for a second operation, the uterus and one appendage were removed through the vagina. The vaginal route was selected, as the patient was not in good condition.

The pathological report on the uterus showed it to contain numerous sarcomatous foci.

The three points of interest in the case are: First, the tumor was pedunculated, the most unusual form of sarcoma of the uterine wall. Second, the sarcomatous foci in the uterus found after its removal though the tumor was attached by a small pedicle. Third, the catgut sutures (which were not chromicized) which were used showed no signs of absorption at the end of seventeen days.

CASE V.—*Round-Cell Sarcoma of the Uterine Mucous Membrane*.—Mrs. T., aged fifty years, had had two children and no miscarriages. The last menstruation was ten years previous to time of operation. During the previous six months there had been considerable watery discharge, but at no time any bleeding. There had been some pain in the lower abdomen, but no loss of weight or strength. On examination the uterus was found enlarged and soft. The uterus was removed through the vagina. The pathological report was round-cell sarcoma of the mucous membrane of the uterus.

CASE VI.—*Sarcoma of the Cervix Uteri*.—Mrs. H., aged twenty-five years, one miscarriage four years ago, but no children. Menstruation was regular, that is, she flowed every twenty-eight days for five or six days, moderately in amount. During the four

months previous to the time that the patient came under my observation she had had some bloody discharge following intercourse. On examination the uterus was found normal in size and position, the appendages were normal, the cervix was hard and nodular with some superficial erosions. A piece of the cervix was removed and reported by the pathologist to be sarcoma of the cervix. At a second operation the uterus and appendages were removed through the vagina.

DR. J. RIDDLE GOFFE.—It would be a point of interest to know whether in these cases Dr. Taylor removed the appendages with the uterus, doing a panhysterectomy, or whether he simply removed the uterus alone.

DR. HOWARD C. TAYLOR.—I removed the appendages with the uterus in all cases except the one of polypoid sarcoma of the uterine mucous membrane. That case was in a bad condition and I did not feel warranted in doing a panhysterectomy. In all the other cases the appendages were removed with the uterus. In one case there was sarcoma of one ovary.

DR. H. J. BOLDT reported a

SLoughING SUBMUCOUS MYOMA. ABDOMINAL PANHYSTERECTOMY.

M. K., aged forty-five years; mother of eight children, the last seven years ago. During the past year she had metrorrhagia which one month ago became very profuse and was accompanied by severe pain in both iliac fossæ, most intense in the right. The blood was usually of dark color. The pains were of labor-like character, about ten minutes in duration, followed by intervals of freedom from pain for a short time and then repeated. Bimanual examination showed a uterine tumor which extended to nearly on a level with the umbilicus, a part of which extruded into the vagina, and emitted a most putrescent odor. With much physical exertion it was possible to enucleate as much of the sloughing tumor as would form a mass six inches in diameter, but it was impossible to enucleate the entire neoplasm; the reason for this is evident from inspection of the specimen. The woman was septic, and was therefore at once removed to a hospital, where, again failing even under anesthesia to accomplish the desired result, I did a radical operation, which resulted in recovery, the septic element disappearing within twenty-four hours after operation. The comments to be made on the case are that the several physicians who, during the four weeks prior to operation, had treated the woman with douches and internal medication all failed to recognize the serious condition of the patient.

DR. H. N. VINEBERG.—When Dr. Boldt related the history of his case I thought she must be the same woman I saw last Saturday. I saw the counterpart of this patient; she was a big woman living downtown and she was beginning to show signs of sepsis. She was willing to give any figure if I could

promise to cure her by medical treatment. She was an enormous woman and had had only one child nineteen years ago. She had been passing shreds for the past two or three months. Some of the doctors who saw her thought she was having a miscarriage. The cervix was quite dilated. The growth that was present was larger than the one presented to-night by Dr. Boldt and could be readily felt in the posterior part of the uterus in the wall, and was undergoing sloughing. I do not know what became of this patient.

Dr. A. H. ELY reported

A CASE ILLUSTRATING THE WISDOM OF TOTAL ABLATION OF THE FALLOPIAN TUBES WHEN THESE ARE EXCISED.

Mrs. W. C. C., age thirty-six, married fifteen years; menstruation began at fourteen, normal until after marriage. Two years after marriage began to suffer pain in the right side. Three years after marriage first pregnant and aborted at third month. Never pregnant again until four years ago, when she became pregnant with extrauterine gestation. Was operated on in one of the general hospitals, the right tube being excised, leaving a half inch of patent tube attached to the right cornu of the uterus; the right ovary was also left. Continued to suffer pain not only aggravated at menstrual period, but constantly present in the right side. In January of this year passed the menstrual epoch, and was seen five weeks after what should have been her menstrual period. At this time there was a mass boggy in consistency occupying the site of the excised tube. The right ovary also gave evidence of a cyst. Ectopic gestation was diagnosed and operation advised. Consent to this was refused until three days later, when patient was suddenly seized with a severe pain in the side and fainted. Operation was now agreed to and performed, when the diagnosis of extrauterine pregnancy in the stump of the right tube was confirmed. A six weeks' fetus was found in a blood clot lying free in the peritoneal cavity. The tube was excised at the right cornu of the uterus, and the right ovary also removed. Patient made an uninterrupted recovery.

Dr. EGBERT H. GRANDIN.—The report of this case by Dr. Ely shows the wisdom, when called upon to remove the Fallopian tube, of excising it entirely from the cornu of the uterus, and then stitching up the cornu.

Dr. EDGAR C. GARCEAU of Boston (by invitation) read an essay on

THE TREATMENT OF CYSTITIS IN WOMEN.*

Dr. J. RIDDLE GOFFE.—I fear that I cannot add anything whatever of value to this discussion. We are under great obligations to Dr. Garceau for the presentation of the treatment of cystitis in women in such a scholarly and thorough way. It impresses me,

*See original article, page 289.

and doubtless all of us, that he has been a conscientious student of this subject. He has very kindly given us the results of his investigations.

There was one point in particular that impressed me, the frequency with which dependence was placed upon cystotomy. I have no doubt that many cases of tuberculosis he not only treats by instillations into the bladder, but cures by drainage. I believe that many of these cases can be cured by simply thorough and complete drainage. While, of course, it is a disagreeable form of treatment for the patient, it certainly is most valuable and efficient and something we can resort to in all the desperate cases which resist other forms. The fistula in the vagina offers an opportunity for local applications, if we so wish. I have resorted to this method of making local applications, that is, through the fistula in the vagina, in many cases.

I should like to report one case of tuberculosis of the kidney accompanied by cystitis. Whether this cystitis was tubercular or not I am not able to say. I removed the kidney and perhaps one-half the ureter. Then I drained the bladder and placed the patient upon creosote. She carried out this treatment for two and a half years, when she was completely well. She was a young woman of twenty-two years, and she entered the hospital for an ovarian cyst, which I removed. Previous to removing the cyst, an examination of the urine showed albumin and some pus was seen coming from the ureter. In those days it was customary, when a patient had an ovarian cyst, to believe that the albumin in the urine was caused by it and, therefore, no attention was paid to it. An anesthetic was given and the cyst removed, but the pus in the urine increased very rapidly after that, and upon a more thorough examination tuberculosis of the kidney was found; I removed the kidney. During her stay in the hospital she became enamored with the profession of nursing and entered the training school for nurses, and she now is a nurse, one of our most acceptable and successful ones. I attribute her complete recovery to the use of creosote.

DR. EGBERT H. GRANDIN.—The paper is such an elaborate and scholarly one, so full of research, that it seems almost superfluous to speak at all. I rise only to call attention to methylene blue, which, in purulent cystitis, has proven of value to me, given in doses of a grain every two hours. After the reaction is shown in the urine, the drug is stopped until the urine becomes of normal color, when it is again administered.

I should also like to call attention to one cause of purulent cystitis which has not been mentioned and which I have seen but once. The cystitis not yielding to irrigations and methylene blue, an examination under an anesthetic revealed an exudate to the left of the uterus. I secured permission to open the abdomen, and found a pyosalpinx which was draining into the bladder.

DR. H. N. VINEBERG.—I am exceedingly interested in the paper, as I have had considerable experience in this line of work.

First, as regards the tubercular cases, I have had eight successive cases of nephrectomy for tuberculosis, with recoveries in all. In all cases bladder disturbances were the most pronounced symptoms, and in six of these cases the painful and frequent micturition was the only symptom. In at least three of the cases there were distinct evidences of secondary tuberculosis of the bladder. All of these cases have gotten well of their tuberculosis of the bladder, and can now retain the urine from four to six hours, have no pain, and there is nothing abnormal to be seen with the cystoscope. To my mind most of these bladder cases do not require treatment after the kidney has been removed. There were three that required local treatment. I tried various things, but perhaps the one that gave me the best results was nitrate of silver applied directly with the patient in the knee-chest posture, using quite a strong solution, such as 20 per cent., 30 per cent., or even 40 per cent.

I had one case that was sent to me by a general surgeon who had removed a tuberculous kidney, first having done a nephrotomy, which I consider an erroneous procedure. She was unable to hold her urine ten or fifteen minutes. I had almost given the case up as hopeless, when I came across an article by Rovsing in which was recommended hot carbolic solution, four or five per cent. In this instance the patient was much benefited by the treatment, although I do not know what the ultimate results have been. But she was able to go from two to three hours without having to stop to void her urine, and she was able to continue her work as a laundress. This patient had been treated by the various remedies that had been recommended for local application.

In reference to nontubercular cystitis, I may not have seen the worst cases, but in all the cases that I have seen I have never yet had to resort to cystotomy for their cure. I can recall a nurse who had a gonorrheal infection of the kidney which had to be removed. She had a very bad bladder and she had to sleep at night with a pus basin at her side, because she had to urinate every five or ten minutes. She had been in various hospitals. Her bladder was once opened. While this remained open she was comfortable; but when it closed the symptoms recurred. So she was sent to me to see what could be done. She was placed in the knee-chest posture and at the apex of the bladder a good sized ulceration, the size of a fifty-cent piece, could be seen. With great persistence, seeing her every other day for three months and making applications of nitrate of silver, she got so she could hold her urine four or five hours and she had little or no pain.

Trigonitis is also a matter of great interest to me, and I am frank in saying that it is not easy to tell with the cystoscope, with the patient in the knee-chest position, with direct vision,

whether there is a normal trigone or one that is hyperemic, as all normal trigones are. While I have in many instances made applications of nitrate of silver to such cases and improved the symptoms present, I have thought that perhaps the good results were due to suggestion or to dilatation of the vesical sphincter. But in those cases in which there is a trigonitis, the silver nitrate applications have acted wonderfully well, at least in my hands.

With regard to the causation, I do not believe in teaching our nurses so much about the need of asepsis as about the dangers from injuring the bladder when they catheterize patients. I consider the use of the glass catheter as more likely to produce cystitis by traumatism than by perhaps being less careful and using a clean rubber catheter. It has been proven experimentally that if you take a normal bladder with no abrasions, you can allow germs to enter and no infection will result. But if there is a slight abrasion, or if there is not a good and free outflow, infection will occur from a very slight cause.

DR. RALPH WALDO.—This scholarly paper is one of great interest. There are two points mentioned upon which more stress should be laid. We see many cases of cystitis that seem to be benefited by the general and local treatment suggested this evening, but they do not recover; they partially recover; the patient thinks she is all right, but the disease returns. In these cases where of course the kidneys are normal, if you make a careful examination it is a common thing to find serious lesions of the urethra. And if you direct your treatment to the urethra, and cure the lesions there, and you can do it without trouble as a rule, your case of supposed cystitis will be permanently cured. I have seen many instances where germ life has been carried by instruments into the bladder, the urethra being the seat of disease.

I cannot allow the question of the use of catheters to go by without saying a word or two against the use of the glass catheters. This is an instrument which is liable to be injured in the process of sterilization, a slight crack forming, making it possible to break off the end. I had a nurse once break off the end of a glass catheter in a patient's bladder and I have a friend present here to-night who works in the same hospital, who had the same accident occur in one of his patients. In the case of mine, fortunately it was possible to fish the particles of glass out without making an artificial opening in the bladder. I am thoroughly convinced that we would have less cystitis and less disease if we used a good, soft rubber catheter. The element of trauma is decidedly great in the production of cystitis and especially in the production of inflammatory disease right at the neck of the bladder, and more bladders are injured by the use of hard catheters than soft ones.

DR. GEORGE TUCKER HARRISON.—I need hardly say that I am intensely interested in both papers, and no subject can be brought

to your attention here of greater importance, whether from the standpoint of science or practice. I only wish to touch upon a few points. I disagree with Dr. Garceau in regard to the use of the curette. One of the worse cases I ever saw, and I have seen my full share of these cases both in connection with my service at the Woman's Hospital and in private practice, was one of chronic cystitis in which there were a purulent discharge, tenesmus, passing of blood, and the woman's life was a perfect torment to her. I treated that case by dilating the urethra after Simon's method; I would not advise every man to do as I did because he might have too large a forefinger. I passed the finger into the bladder, as Dr. Garceau has so well described, and found the trigonum filled with little vegetations. I used Thomas's curette. The woman was relieved, but not much, and I felt the necessity of doing another operation. This time I cured the patient. I used an injection which probably none of you have ever used and which has not been mentioned, that is, a mixture of carbolic acid and tincture of iodine. The result was that the woman got perfectly well. She now has such faith in me that she comes from Washington State in order to be under my care.

There is another point that Dr. Garceau called attention to and which Dr. Waldo emphasized, the importance of treating the urethra. None of you have mentioned the treatment suggested by Emmett, making a button-hole; this is the best way of treating not only the urethral lesion, but the lesion of the bladder as well. I have made this button-hole in a patient who did so well that she would not allow me to heal it up. As a matter of historical justice credit should be given where it is due, and the man to whom it should be given is Dr. Sims. Afterwards Dr. Emmett used it and depended upon it to a large extent. Those men in the Woman's Hospital who have seen it used know what happy results followed.

In regard to the pathological division, it is much the same with cystitis as it was with tuberculosis. You know that before the brilliant discovery of Koch there were many varieties of inflammation of the lungs; they were too numerous to mention. Then with Koch's discovery like a flash of lightning they disappeared, for it was found that they were dealing with one cause, Koch's bacillus. This same thing applies to cystitis. I do not know what to call them but I do believe they are all dependent upon microbic infection. It is not always necessary to think of trauma. Barlow has shown by his experiments in animals that much depends upon the virulence of the pathogenic germs that are injected. We must look to the pathogenic germs if we are to consider the etiology of cystitis.

DR. MALCOLM McLEAN.—I would like Dr. Garceau to state, in his closing remarks, what his experience has been in cases of pus kidney, with a large amount of pus flowing from one kidney into the bladder, without cystic symptoms, or symptoms of cys-

titis. I have under my care such a case that I have treated for nine or ten years. This woman keeps her health good, and yet several ounces of pus flow daily through the right kidney into the bladder, without any vesical symptoms whatever.

I cannot allow the remarks made about glass catheters to go by without saying something myself. One should not condemn the glass catheter any more than one should condemn a knife without designating the kind and knowing how it should be used. It is true that if you go to the average instrument maker and ask for "a glass catheter" he will give you one that is five or six inches in length and which, in the hands of most nurses, may come to grief and cause trauma. Some years ago I presented to this Society a glass catheter with which this trauma could be avoided. It was two inches in length with simply a soft rubber tube connected with it. The ease with which it was introduced recommended itself to all at once. It is a fact that it does not enter the bladder at all, but simply enters the sphincter vesicæ, and so empties the bladder. This does away with the objections raised against the ordinary glass catheters. This has been used extensively in this country and in Europe. Anyone once using it will never go back to the rubber catheter. It is easily managed, it is safe, and has none of the objections of the ordinary glass catheters. It is better, too, in that it can be more easily cleaned.

DR. J. B. COOKE.—I think that the hard catheter is a safer instrument than the soft, but by this I mean the hard rubber or metal and not the glass catheter. The point is this. Many nurses, in using a soft catheter, will wipe it around the vulva and labia before they succeed in entering the urethra. Whereas with a silver or hard rubber catheter by separating the labia they can succeed in entering without carrying infection.

As to the trauma produced by the hard catheter, that I believe is the fault of the operator and not the fault of the catheter. If the operator pushes it in with too much force there will result trauma. But I think that, in general, we ought to object to the use of the soft rubber catheter. The catheter Dr. McLean speaks of I have used again and again, and it has given me every satisfaction.

DR. A. BROTHERS.—I should like to ask Dr. Garceau how he manages a case of cystitis in which there is a vesicovaginal fistula. In some patients after the immediate relief that is experienced they seem more uncomfortable from the persistence of the fistula than from the cystitis.

Another question I should like to ask Dr. Garceau is, what has been his experience with gomenol as recommended by French writers?

In reference to the glass catheter it is not always the fault of the doctor using it that the injury is done. A sudden movement of the patient may produce the trauma. In a case of mine

the house surgeon was washing out the bladder with a glass catheter *in situ*, and the patient made a sudden lurch and broke the end of it off.

DR. BROOKS H. WELLS.—I have been interested in this subject for a number of years; I have followed Dr. Garceau's work with much interest and I am sure that I have learned a great deal from his experiences.

It seems to me in the treatment of cystitis it is very important that we should first make a diagnosis, and this diagnosis always means the employment of the cystoscope, as well as a bacterial examination of the urine. Then in the treatment of the disease, the most scrupulous antisepsis and extreme gentleness are of the first importance. In cases where the bladder is ulcerated, I have been in the habit of curetting the surface of any ulcer showing granulations, and after the bleeding has ceased, touching the ulcer thoroughly with nitrate of silver fused on the end of a silver probe. The silver may have to be employed a number of times. Where the ulceration is tubercular it is particularly necessary to look after the general condition of the patient; that is, to employ forced feeding, rest, fresh air, and, in many cases, one of the preparations of creosote. In the local treatment of the bladder, aside from nitrate of silver, I have used the Guion method and other drugs, and finally I gave them all up for one of the newer salts of silver. I should like to ask Dr. Garceau whether he has obtained good results from the use of any of the so-called vitillin or albumen silver preparations. I have used argyrol freshly prepared in 10 per cent. to 20 per cent. solutions in sterilized water, keeping the bladder partially distended almost continuously with this solution; under its influence the patients made very brilliant recoveries. This treatment causes absolutely no pain. I believe the bacteria disappear more quickly under this treatment than under any other. I can report two cases recently met with in which there were tuberculous ulcers of the bladder, completely cured by curettage, the application of nitrate of silver, the general treatment mentioned, and the use of argyrol.

I should like to ask Dr. Ely or Dr. Garceau why it happens that a colon bacillus infection of the bladder so often appears simultaneously in those having marital relations. I have seen several such cases of infection of the bladder with the colon bacillus, with decidedly severe symptoms, the infection appearing in the husband and wife simultaneously. I remember one case in particular; a young man in town took unto himself a virgin; a few days after their first intercourse both developed an acute colon bacillus infection. The woman was referred to me by Dr. Chetwood. The bacterial examination of the urine revealed a pure culture of a large bacillus which Dr. Jeffries, pathologist to the Polyclinic, determined to be the colon bacillus.

DR. A. H. ELY.—In regard to cystotomy there is much to be said of the technique. Unless great care is taken to stitch

the bladder and vaginal mucosa together, you will have exaggerated many of the symptoms referred to. The fistula and bladder must be properly cleansed and free as possible from irritating discharges; I know of nothing better than zinc oxide ointment, which is so easily applied.

The various complications that have been spoken of to-night fortunately have occurred in my hands infrequently.

In answer to the question asked regarding gomenol, I think it is one of the best preparations for irrigation purposes, especially where there is a colon bacillus infection. I think it penetrates deeper into the tissues with less pain than other preparations. I have used it continuously for six years.

I have been interested in what has been said regarding the use of argyrol, and also regarding the curette. I use the curette and I use argyrol, and without pain or any disturbance. The use of the nitrate of silver is painful to many patients and they will often not submit to this application. They prefer the regular tenesmus rather than the acute tenesmus after silver nitrate applications.

With regard to the colon bacillus infection I know of no organism which seems to vary so in its virulence. In many cases they are found giving, as you all know, no bladder symptoms. Then, on the contrary, one occasionally meets with colon bacilli of extreme virulence. A case of cystitis universalis (colon bacillus) may be as intractable as one from tubercular infection.

DR. GARCEAU.—A suppurating kidney that discharges pus into the bladder does not seriously affect the bladder wall unless that wall has been injured in some way. In other words, you may have a discharge of pus into the bladder for a good many months, and the bladder does not suffer injury. The epithelial lining of the bladder is much analogous to that on the surface of the body, although much finer in texture and more easily injured. Suppuration in the kidney, of a tubercular form, need not cause changes in the bladder, and, on looking up the literature on this subject, I have found a number of cases in which the condition of the bladder was noted during the time when pus was coming down from the kidney; in a number of these instances the report distinctly stated that the bladder wall was normal. Of more frequent occurrence perhaps is a pyelitis, especially the form seen in pregnancy. Here we have a very large discharge of pus from the kidney, and yet the patient will complain of no symptoms at all on the part of the bladder, except, perhaps, at the beginning of the trouble. Then there is occasionally increased frequency of micturition which lasts a little while, but soon subsides, and the patient does not have to urinate more than the ordinary number of times in spite of the fact that she is passing large amounts of pus in the urine.

The bladder in these cases has a peculiar appearance; it has a

glossy look, as though it was covered with starch, and it is slightly redder than normal; other than this there is no change.

These bladders should be left alone; if you attempt any treatment you are very apt to cause trauma, and this leads to cystitis which you are so anxious to avoid.

Dr. Harrison has spoken of having curetted the bladder in many cases, and with beneficial results. I evidently did not make myself clear when I touched upon this. I think that cases such as Dr. Harrison mentions are greatly benefited by curetting. As he stated, lesions that are entirely confined to the trigone are sometimes of a papillomatous nature, and this form is greatly benefited by curetting. But these lesions are superficial, and a thorough curetting will remove them entirely and leave a healthy granulating surface below. The kind of cystitis which is not benefited by curetting, but, on the other hand, is distinctly made worse, is that form in which the lesions are not superficial, but deep. It is difficult to imagine how a curetting could do any good in cases in which the bladder is involved throughout its entire extent, from the internal to the external surface; the curette can here only do harm.

The treatment which has given me the best results after cystotomy is simple and efficacious. The patient takes at home, preferably with assistance, two copious vesical douches of two per cent. boracic acid solution, using about six quarts each time. The fluid flows through a catheter, which is passed through the urethra into the bladder, and the solution thoroughly flushes the cavity and comes away through the fistula into the vagina.

An annoying complication after cystotomy is the deposition of lime salts about the edges of the fistula. This deposition is very irritating and causes a great deal of pain. The best treatment is to scrape the salts off with a curette and immediately apply nitrate of silver to the raw surface.

Prolapse of the bladder membrane is not of very frequent occurrence. It is almost never seen in young people, and is much more common in women who have passed the age of forty or thereabouts. In these cases the tissues are lax, and the pelvic contents, including the bladder wall, have a tendency to fall down, especially if the patient has had children.

A vaginal fistula, while it ensures comfort and gives relief from the pain, is nevertheless an annoyance, and requires constant attention and care on the part of the patient. A good deal of annoyance may be avoided by wearing a well fitting pessary which collects the urine as it drops from the vagina; this pessary is connected with a reservoir by means of a tube, and if it is properly made it collects every drop of urine, and keeps the patient dry. The apparatus requires a great deal of care, and should be boiled every day. The patient should receive instructions in regard to absolute cleanliness, especially cleanliness of the hands.

Rubber gloves should be worn, and taken care of in the usual way.

I have had no experience with gomenol, nor with the albuminoid preparations of silver mentioned by Dr. Wells, and I can give Dr. Wells no information in regard to double infection of the bladder by the colon bacillus in the cases which he mentions.

TRANSACTIONS OF THE SECTION IN GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of March 21, 1907.

The President, JOHN G. CLARK, M.D., in the Chair.

SYMPOSIUM ON THE ABDOMINAL WOUND.*

The following papers were read:

THE ABDOMINAL WOUND—ITS IMMEDIATE AND AFTER CARE.

Dr. Charles P. Noble.

GASTROINTESTINAL COMPLICATIONS FOLLOWING ABDOMINAL OPERATIONS.

Dr. F. F. Simpson, Pittsburg.

CARDIAC AND VASCULAR COMPLICATIONS FOLLOWING ABDOMINAL OPERATIONS.

Dr. G. Brown Miller, Washington.

RENAL COMPLICATIONS FOLLOWING ABDOMINAL OPERATIONS.

Dr. Stephen E. Tracy.

DISCUSSION.

DR. RICHARD C. NORRIS: I was particularly interested in Dr. Simpson's remarks about the delay in operating in inflammatory cases and the apparently good results he obtains by that delay. This comes as a new thought to me. My personal feeling is that we sometimes lose valuable time by prolonged delay in operating on most inflammatory cases, and unless I change my opinion by further investigation of such cases, I shall continue to operate in the inflammatory stage and thus help nature to prevent those very adhesions, infiltrated tissues and necrotic lesions which add to morbidity and a mortality, and which in the earlier days of the gynecological and obstetrical societies we were taught to avoid by prompt operation. The only class of cases to which delay

*See original articles, pages 328, 332, 347, and 358.

seems appropriate is that of localized pelvic abscess, delaying only for vaginal incision and drainage. Dr. Simpson's experience differs from ours, and it behooves us to look into this matter to determine which practice really is better.

I think the method of suture helps to determine whether a patient shall leave her bed soon after operation or not. For example, a man who uses catgut in tier sutures and no supporting interrupting sutures of other material, would be foolhardy to let his patient get out of bed as early as the man who keeps the wound supported with a few interrupted sutures. I maintain that the few interrupted sutures, in addition to catgut tier sutures, have an advantage in preventing hemorrhage into the lateral planes of the tissues and thus prevent the occurrence of hematoma, which helps to break open some of the wounds at a late period if this method of suture has not been employed.

The whole subject of thrombosis and embolism following operations is still a mystery to us. I do wish that the pathologists could throw some light on these questions and give us more definite knowledge of the etiology of this accident.

I have been much interested in all the papers of the evening, but the late hour does not permit discussion of one's experiences with the various complications that have been mentioned.

DR. JOHN B. DEEVER: I have very little to say, except that I am sorry to notice that my friend, Dr. Noble, expresses himself in favor of methods which belong to the fracture-box age. I think Philadelphia is about the only place where the fracture-box is used; elsewhere fractures are treated with plaster-of-Paris dressings. Dr. Noble speaks of keeping patients in bed for a certain length of time and says that he has many cases of phlebitis. Before I allowed my patients to get out of bed as early as now I saw an occasional phlebitis. Last year I saw but one femoral phlebitis. That was in septic appendicitis and lasted but a short time.

I noticed what Dr. Noble said relative to the suturing of wounds, and I especially admire his recommendation and practice, overlapping the aponeurosis. I do not think there is any doubt that you offer better security by the overlapping of a third of an inch than by uniting edge to edge.

I agree also with Dr. Noble as to the propriety of using the tier sutures of catgut. As he has said, some persons prefer kangaroo tendon, but I do not think it so advantageous. I let my patients out of bed in two or three days and my results have been very satisfactory. I have no hesitancy after operating for fibroid to allow the woman to walk the following week. She will have no pain in the back, no eructations. In all my gallstone cases I insist upon the patients being active. Formerly I have seen an occasional pulmonary embolism, but I have not seen one in the last year. Many of the gynecological cases would not become neurasthenic if they were not kept in bed for five and six weeks. In

hearing Dr. Mitchell speak of post-operative neurasthenia, I thought perhaps the neurologist was responsible for the condition by being too late in sending the case to the surgeon to have the lesions removed which caused the neurasthenia. Now I believe the condition is largely due to the fact that patients are pampered and nursed too much.

The question of gastrointestinal disturbance as brought out by Dr. Simpson is interesting. I have done many thousand operations and never had a case of acute dilatation of the stomach or one of gastric tetany. Regarding the question of buried stumps, I never have time to bury stumps. I do an average of 1,400 operations a year, last year having 2,200, and have seen no case of intestinal obstruction. I can recall but one case of intestinal disturbance attributed to obstruction with the stump. Four days after the operation the patient began to vomit. The belly was opened and the small intestine was found hitched up to the right stump.

These are all interesting questions that have been brought up, and I would like to ask my gynecological friends not to live away back in the dark ages any longer, but to get their patients out of bed early.

DR. GEORGE M. BOYD: I would like to mention a case of rupture of the abdominal wound in a case operated upon for fibroid tumor. I used non-absorbable sutures and removed them on the ninth day. On the eleventh day the patient had a vomiting and coughing attack and to my surprise and chagrin I found the wound gaping and a large knuckle of bowel protruding. This rupture of the wound did not take place until the eleventh day. Prior to that time it had been my custom to remove the sutures of the abdominal wound as early as the eighth or ninth day. That rupture of the incision has been a lesson to me, and to guard against a repetition of the accident I invariably, when through-and-through non-absorbable sutures are used, allow them to remain for a longer time.

DR. NOBLE closes: The first point with reference to Dr. Simpson's paper which attracted me was his advocacy of the systematic waiting before operation for pelvic inflammatory trouble. In a general way I quite agree with him about this, and it has been the outcome of my own experience that this is a wise plan to follow. Attacking the subject from a different standpoint, I analyzed all the cases I had operated on for pus in the pelvis, to ascertain the results of the different methods of operating. I found that where the older methods were used of removing the appendages, one or both, there had been a mortality of 6 per cent., including the cases in which we had pus tubes or abscess of the ovary. When a hysterectomy was done the mortality was 2 per cent. If, however, in addition to the pus tube or abscess of the ovary there was an intraperitoneal abscess, the mortality was 25 or 30 per cent. As a

matter of practical experience, in the older days, I was driven to a practice similar to that advocated by Dr. Simpson, namely, the more acute the inflammation, the more dangerous is the operation. It has been my practice for years in all the cases in which the inflammation was sufficiently violent to threaten life, where we had abscess, to drain through the vagina and to wait until the acute symptoms had subsided before operating further.

As to the exact time of operation, I have not been so systematic, but I am satisfied that it is far safer to operate after the germs are dead than when they are alive. Also, we can do better work if we wait until the exudate has disappeared. This avoids all necessity for drainage and prevents post-operative sequelæ.

Dr. Simpson referred to post-operative obstruction. I have had a number of cases where this obstruction seemed to be due simply to a parietic bowel. The first one I saw was in the practice of Dr. Boyd, following labor. The woman had twins, or hydramnios, at all events a very great distention of the abdomen, and following labor she developed obstruction of the bowels. On section there was no trouble in the peritoneum, but the bowel was paralyzed and she subsequently died. I have had several cases following operation in which the same thing was true; not only was no peritonitis present, but a careful bacteriological examination showed no infection, and yet the patient died from obstruction. I am sure death was due to the parietic bowel; what caused the paralysis was not demonstrated.

With reference to acute dilatation of the stomach, I am sure that in the lesser degrees of dilatation recovery often takes place, provided the stomach tube is used early and systematically. This question was first brought to my attention some years ago by suspecting that I had a case of obstruction of the bowel following operation, where I reopened the abdomen and found the entire abdomen filled with the stomach. By putting the stomach tube in with the patient on the table, the entire contents ran out into a bucket. The patient died because the added operation was sufficient to turn the scale against her. That case taught me the lesson of using the stomach tube whenever persistent vomiting, more especially with distention in the upper abdomen, is present. Cases which I used to think died of septic peritonitis now get well with the use of the stomach tube.

I have been much interested in Dr. Miller's paper because this subject of phlebitis and embolism has interested me particularly, as I could never satisfy myself with an explanation of the situation. I have had my share of phlebitis and probably of embolism also. I have also been impressed with the fact that sepsis had little to do with it because most of the cases in my experience have been in non-septic patients. The operations were for non-septic conditions and the course of the cases not that to make one believe that sepsis played a rôle. The figures of Dr. Miller

support that idea. While sepsis does play a rôle, it is a small one.

I am hopeful that permitting patients more freedom after operations may be of service in this direction, but I think we must wait before we can draw any definite deductions. I do not think we have any evidence at present.

The combination of interrupted sutures with tier sutures, to which Dr. Norris alludes, no doubt has advantages, but I think not so much from the standpoint he mentions as because it tends to prevent the formation of dead spaces. I think if we study the question of the bursting open of non-suppurating wounds we find that it usually occurs so late that the interrupted sutures would have been removed. The accident often occurs as late as the thirteenth day, and as a rule interrupted sutures have been removed prior to that time. While the combination has some advantages, I do not believe it will prevent this accident, which is due to a failure of union rather than to the method of suture. It is due more particularly to some trouble with the vitality of the patient, which prevents proper reparative processes going on.

Dr. Deaver has spoken of the gynecologists being in the fracture-box age. I think that if the doctor will look up the literature of the question he will find that just as in the past the general surgeons have followed the gynecologists, so in this they are following the lead of a gynecologist.

Boldt of New York, a gynecologist, introduced, and is the chief apostle of the practice. Whether Dr. Deaver is wise in following him or not I think we must wait for the evidence to show. Also I believe that, just as the general surgeons in the past have followed the gynecologists in good lines of technique, so they will follow us by covering over pedicles and spending a little more time in obtaining a finished technique rather than in hastening the ultimate minimum of time in which it is possible to hurry through an operation.

DR. SIMPSON, closing: I wish first to thank your society for the privilege of being with you this evening and, further, to add my testimony to the value of the method of overlapping the fascia brought out some years ago by Dr. Noble. The clean dissection of fat which permits fascia to be brought into contact with fascia is an extremely important feature of that method. Let me, further, commend the work of Dr. Tracy. The kidneys play a very important rôle after operation by eliminating post-operative poisons. They, accordingly, require very close watching. In 1898 I made a critical study of the urine and clinical course of the preceding thousand patients subjected to major gynecological operations, my connection with these cases being as assistant or operator. Albumin and casts were present in 1.7 per cent. of the cases. Four per cent. showed evidence of transient renal insufficiency. The prophylaxis, etiology, time of onset, sequence of symptoms, urinary findings, duration of disease, and specific line of treatment are so uniform in occurrence, and so characteristic

as to constitute a definite disease entity. Its important bearing upon the result of operation entitles it to a definite name.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of April 9, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. MORAN presented the report of a

CASE OF RECURRENT ECTOPIC PREGNANCY.

Mrs. K., age 34, married April 27, 1898. Menses regular and painless. Missed period in October, 1898. On December 4 was seized with cramps in abdomen, followed by scanty, bright flow. Admitted to Columbia Hospital, December 29. Examination revealed a mass behind and to right of uterus. Diagnosis, tubal pregnancy. Operation by Dr. Stone, January 4, 1899. Right ovary and tubes removed. Recovery prompt. One year later again pregnant, went to term, and was delivered with forceps on account of inertia. Second child was born two and a quarter years after; labor very rapid. Experienced good health and periods recurred regularly until last January. February 16, two weeks after regular term, became unwell; flow apparently normal until the 19th, when it became profuse and attended with severe abdominal pain and pressure upon the rectum. Also noticed shreds in the discharge. Examination March 25 by Drs. Moran and Stone showed a mass behind the uterus and apparently attached to it. Owing to rigidity of the abdominal muscles the upper limit of the mass could not be determined. Naturally, from the previous history ectopic pregnancy was suspected, but the resistant character of the mass indicated the possibility of retroflexion or a small fibroid in the posterior wall. Operation performed by Dr. Stone, April 3. Mass behind and to the left of the uterus composed of tube, ovary, and coagulum. Several ounces of fluid and coagulum in pelvic cavity. Diagnosis of tubal pregnancy confirmed by pathologist's examination, April 17. Two weeks since operation. Patient sitting up.

DR. FRY said that he was recently called in consultation by Dr. Morgan to see a case who gave a history of ectopic gestation. The woman had given birth to a child eight or ten years before. She had caught cold and was suffering with abdominal pain. Confined to her bed two weeks. Examination showed a mass to the left of the uterus which felt like a fibroid tumor. It was situ-

ated high in the pelvis and there was slight fluctuation posteriorly. The diagnosis of extrauterine pregnancy with broad ligament rupture was made, and the mass was opened by way of the vagina. About one quart of dark, tarry blood and clots was evacuated. Two drainage tubes were placed in sac, one high and the other in the bottom of the sac, and the sac was thoroughly washed out through the tubes. The patient, who was weak and anemic, ran a septic temperature for several weeks, in spite of this thorough cleansing. All his cases of this kind had this temperature following this operation, and he wished to know if other operators had the same experience in their cases.

DR. CARR said that a few years ago at the Emergency Hospital he operated upon a right tubal pregnancy, and in six months upon the same woman for a similar condition in the left tube.

DR. STONE said that the amount of blood in the abdominal cavity in the case was several ounces. The condition was not a rupture of a tubal pregnancy, but a tubal abortion, and the mass was due to encapsulating lymph over the escaped blood. With regard to Dr. Fry's case, the septic temperature might have been due to blood high in the abdominal cavity. In delayed cases the fever was due to absorption.

DR. BOVÉE said that he would like to qualify the statement of Dr. Stone that he, Dr. Bovée, had advocated the vaginal operation in all cases, by stating that he had done so only in the early cases. He had now abandoned it. The temperature in cases like Dr. Fry's was due to infection. All cases opened through the vagina became infected.

DR. STONE reported a case of

MYOMA, CARCINOMA OF THE CERVIX, AND SALPINGITIS.

Mrs. M., aged 47, white, had had history of pain and hemorrhage and consequent anemia. Blood: white cells, 13,500; hemoglobin, 80 per cent. Appearance suggestive of cachexia. Tumor in pelvis size of fetal head. The fundus was movable; the cervix greatly enlarged, inelastic, and nodular. Its appearance indicated a former stellate laceration. The "portio" was pale, and there was evidence of diminished mobility. On each side of the body and low down were two large masses (pus tubes). There was no positive evidence of parametric involvement. The abdomen was opened from the pubis to within two inches of the umbilicus. No omental or intestinal adhesions. The fundus of the uterus was greatly enlarged, due to a single large myoma (three and one-half inches in diameter). The adnexa were very much diseased, the ovaries not so much enlarged and involved as the tubes. The left tube was six inches long, the right eight. A parovarian cyst, one-half ounce, on one side. Both tubes were distended with pus, one and a half ounces in right tube, and one in left. The ovarian and round ligament arteries were ligated on each side. The bladder was separated from the anterior surface and the whole para-

metrium exposed. The left ureter was seen passing through hard, possibly condensed and infected connective tissue, which firmly clamped the ureter, which was perceptibly larger than the right. The left uterine artery was ligated one inch outside of the ureter. The dissection was comparatively easy, and severe hemorrhage was easily avoided. The mass of suspected connective tissue was removed, and there was but little evidence of glandular involvement outside of the ureters or between them and the pelvic wall. The only vessels that gave trouble were those found below the uterine arteries, the vaginal or branches of the hemorrhoidal. The cuff of vagina attached to the cervix was not all of that organ which was removed. Other portions were excised after the specimen was removed. As the left appendage was brought up from its position below and to the left of the uterus, a thick and inelastic portion of the uterine growth with its peritoneal cover was torn away, causing persistent bleeding until the region was excised along with the upper portion of the vagina.

Length of uterus from cervix to fundus was $8\frac{1}{2}$ inches. Specimen showed carcinoma of cervix of squamous cell type. The vagina was involved, and there was also inflammatory thickening of its walls. Sections taken from different portions of the cervix showed more or less infiltration of entire cervical portion of the uterus. The connective tissue outside the uterus was not microscopically examined by the pathologist. There was every reason to think an invasion of the parametrium had begun. Since operation the patient's condition had not caused anxiety, although she had had pain and had asked for anodynes, which had occasionally been allowed because she had evidently been accustomed to the use of morphia.

DR. BOVÉE said that the combination of carcinoma and myoma was considered by many to be extremely rare, whereas malignant growths were present in 5 per cent. of cases of fibroids.

DR. FRY said that in this case he did not believe the woman would live any longer than if the operation had not been done. With extensive involvement of the vagina or broad ligaments hysterectomy would not cure. He rarely met with a case of carcinoma of the cervix where he performed a radical operation. He preferred the cautery.

DR. MILLER said that Wertheim's statistics were so good that he believed that by a radical operation, according to his method, many more cures could be effected than was now the case by cauterization, zinc chloride applications, and less radical operations. Since 1898 Wertheim had been following the method now used, and had operated upon 345 cases of cervical carcinoma. Fifty per cent. of all cases presenting themselves had been subjected to the radical operation, and after five years 60 per cent. of these cases were free from recurrences. His mortality was large (15 to 18 per cent. in the beginning, and in the last 100 cases 8 per cent.), but he apparently cured at least 25 per cent. of

all cases. This record was unequalled by any other method of treatment. It therefore behooved us to so perfect our technique as to equal or approach his results.

DR. STONE said that he could find only twenty-four recorded cases where there was an actual change of a fibroid into carcinoma, and fewer cases where a sarcomatous degeneration occurred. In many cases the conditions were associated. Many removed the cervix, but he did not think it necessary, on account of the possible occurrence of carcinoma developing there after the supravaginal amputation.

DR. STONE reported a case of

HYSTERECTOMY FOR HYPERTROPHY OF THE UTERUS WITH HEM-
ORRHAGE.

Mrs. S., aged 45, had a history of curettage five years previously. Uterus very large and retroverted. A fibroma of small size was suspected. Hysterectomy was done March 27, 1907. The appearance of the cervix was suspicious, and it was decided to remove the organ. On account of its size it was decided to open the abdomen. The uterus appeared mottled and very much enlarged. The adnexa were not greatly changed in appearance, but the tubes were long and distorted. The uterus was removed. The operation was begun in the vagina, the cervix ringed; vagina packed with gauze. The uterus was 5 inches long, 3 wide, $2\frac{1}{2}$ thick. Walls $\frac{1}{2}$ to $1\frac{1}{4}$ inches thick. When divided the walls showed large vessels. No nodules were seen. The mucosa was not greatly thickened. The thick portion was curetted away. Diagnosis: hypertrophy with retroversion, glandular hypertrophy of cervix.

DR. PRENTISS.—Simple hypertrophy of the uterus was a rare condition, and he could not see why it should occur. The specimen was more likely to be a fibromyoma.

DR. FRY reported his third case of

VAGINAL CESAREAN SECTION FOR ECLAMPSIA.

B. N., colored, unmarried, aged 16 years, primipara, was brought to Columbia Hospital in an unconscious condition. She had had five convulsions before admission and four more soon after arrival at the hospital. Urine heavy with albumin and casts abundant. Morphia and veratrum viride were given hypodermically. She was eight months pregnant; comatose; no labor pains; cervix not effaced; heart sounds distinct in left lower quadrant. She was sent to the operating room and delivered with forceps after vaginal Cesarean section. Anterior incision only. She remained comatose forty-eight hours afterwards, but made an uneventful recovery. Urine, one week after operation, was free from casts, and a small quantity of albumin only was found. The infant weighed 7 pounds 12 ounces. It was asphyxiated, but revived. It had several relapses during the day, and died the next night from toxemia.

DR. SPRIGG said that he had operated upon two other cases at the Columbia Hospital for eclampsia, doing the vaginal Cesarean section. The last was an enormously fat woman with tremendous buttocks, which rendered the operation very difficult.

DR. MILLER asked the indications for vaginal Cesarean section in eclamptic cases. In the majority of cases with pregnancy at the sixth or seventh month, where the child was not viable, as was the case in most of the cases just recited, he did not think the operation necessary. In two cases of eclampsia seen recently, both primiparæ, he had no difficulty in dilating the cervix sufficiently to do a version and deliver the child.

DR. FRY said the six cases that had been done at the Columbia Hospital had all been unfavorable cases. The uterus had been emptied promptly. All were cases of extreme toxemia, and all had recovered. All of the children had been lost. In regard to Dr. Miller's question, he would say that, as a rule, in primiparæ one could not dilate the cervix, while in multiparæ one could.

DR. FRY also reported a case of

FIBROID UTERUS,

of interest for two reasons: First, in connection with discussion of the subject of last meeting—removal of appendages for fibroids. In this case one appendage was found down under the tumor, and the tumor itself was adherent and bound down to the pelvis. Second, the case showed the importance of preparatory treatment. The woman had allowed herself to bleed because she thought it was change of life. She was almost exsanguinated; hemoglobin, 30 per cent.; red corpuscles, a little over 2,000,000. She was sent to the hospital and kept under treatment five weeks. Her menses were kept back with gauze tampons. Hemoglobin and red corpuscles gradually increased, and were respectively 80 per cent. and 4,000,000 at the time of operation. She made an excellent recovery.

DR. STONE said that in the preparatory treatment rectal injections of salt solution gave good results. He did not see how the tamponing of the vagina did any good. Salt solution, however, filled a long-felt want in these cases.

DR. BOVÉE emphasized what Dr. Stone had said about the use of salt solution. In one case he had increased the amount of hemoglobin from 17 per cent. to 75 per cent. in four weeks. He regarded it as the best remedy which we had in these cases. He practically used it exclusively in cases of extreme anemia preparatory to operation.

DR. FRY said that his patient had bled profusely at her periods. Tampons and compresses to the vagina with a "T" bandage had controlled the flow. Salt solution was useful in addition to food, iron, etc.

DR. FRY reported a case of

PUBIOTOMY.

Dr. Fry was called in consultation by Dr. Roman on Sunday morning, March 17, 1907. The patient had been under ether for two hours, and high forceps had failed to deliver the child. The woman was a primipara, 36 years of age, and very stout. The perineum was torn and the vulva badly contused. Labor had commenced Saturday afternoon. The head was at the brim with a large caput succedaneum; position transverse; occiput to the left. Flat pelvis; conjugata vera 8.5 cm. Tentative application of forceps failed.

The patient was sent to the operating room of the Garfield Hospital and immediately prepared. The method of operating was changed from that of the case previously reported to this society on account of the thickness of the superimposed fat. An incision about three or four centimeters long was made on the left of the median line, extending upwards from the top of the pubic bone. The finger was pushed down behind the bone, and then, with the finger in the vagina, the ligature carried was guided as before, under the bone and to the outside of the labium majus. The bone was speedily severed and the infant delivered easily with forceps. Separation about 4 cm.; very little hemorrhage. The limbs were extended and lateral pressure upon the pelvis brought good apposition. Retractors inserted in the incision exposed to view the ends of the bone. Two chromicized catgut sutures were passed through the periosteum, and the wound was closed by silkworm gut sutures. A broad adhesive strap was applied around the pelvis, and the patient was put to bed with sand bags on each side. Owing to the thick layer of subcutaneous fat, the adhesive plaster and muslin bandage failed to keep the ends of the bone approximated. A heavy canvas surcingle, about 3 inches wide, was buckled tightly with two straps around the pelvis, the upper edge just below the anterior superior spines. This pelvic girdle was padded on each side to relieve pressure, and answered the indications admirably. In future he would employ this, instead of the adhesive strap. The patient was annoyed by gaseous distention of the bowels for a week, though daily evacuations occurred. Strychnia was administered by mouth, and three times daily she received a hypodermic of eserine salicylate, gr. 1/40, with nitroglycerine, gr. 1/100, and sulphate of magnesia on alternate days. Owing to the heavy weight of the patient it was difficult to place her upon the bed pan; consequently she often passed feces and urine in bed. She had two or three degrees of fever for the first week; then it rose to 102°, and phlebitis of the left leg developed. On the tenth day her condition was excellent, and she expressed herself as feeling unusually well. She was turned carefully on her side, in order to clean her bed and change the linen. This was probably a fatal error, as early the next morning, soon after having been turned

again, symptoms of heart embolism appeared, and she died twelve hours afterwards. The infant weighed nine pounds; it made a few ineffectual attempts at respiration. The head was badly bruised and disfigured by the forceps.

DR. BOVÉE read the essay of the evening.

THE USE OF IODINE CATGUT IN ABDOMINAL SURGERY.¹

DR. SPRIGG said that the simplicity of the method recommended it. He found the catgut satisfactory in every respect. It was absorbed in the vagina in eight days. Its special advantages were its germicidal properties, great tensile strength, and ease of preparation. It was recommended that the smaller strands be kept in solution seven to eight days and the larger ones eight to nine days, but all were kept in for fourteen days. Keeping it in the solution did not tend to decrease its strength. When prepared with the iodine the gut became so hard that it would remain in tissues for months. Many used it in place of kangaroo tendon. In the cumol preparation of catgut five distinct processes were required. In the formaldehyde preparation four to five days were necessary. Moynihan's method was by the use of concentrated solution of ammonium sulphate. It was useful for only six to eight weeks. Claudius was the first to use iodine gut. He used iodine, iodide of potassium, and water.

DR. SKINNER said that at the time of the last meeting of the American Medical Association he visited several New York hospitals, and noticed many instances where the catgut broke easily. He wrote to many prominent hospitals to find out their methods of preparing catgut. At the Johns Hopkins they used the cumol and Bartlett methods. At the Roosevelt Hospital the gut was chromicized and sterilized by repeated boiling in alcohol. Mt. Sinai Hospital used iodine catgut. St. Luke's used a modified Bartlett method.

DR. WHITE said that he was the first to use iodine catgut in Washington. He read a paper before the society in January, 1904, on this subject. To test the method he soaked the raw catgut in a streptococcus culture and then put it in the Claudius solution for eight days. He then washed the iodine out thoroughly and the gut was sterile, while streptococci would grow in the medium in which the gut was placed, showing that no iodine was carried over to inhibit the growth of this bacteria. He tested it in guinea-pigs with negative results. He would criticise Dr. Bovée's method of putting it in tight jars. He did not believe the jars were air-tight. Also he would use ordinary alcohol in place of absolute alcohol, the difference in the cost of the two being very great. Very little iodine was left in the catgut, about one-fifth of a grain to one foot, and it would take at least twenty grains to cause death.

DR. FRY said that his only objection to the moist iodine catgut

*See original article, page 366.

was that he never felt sure that the knots would not slip. He used No. 3 chromicized gut for pedicles. Kangaroo tendon had greatly degenerated, being as a rule brittle. The most satisfactory method of preparation, so far as tying was concerned, was the cumol method.

DR. STONE said that the use of catgut sutures was one of the greatest advances ever made in aseptic surgery. When the formaldehyde method was first introduced he had Drs. Reid and Carrol test the sterility of the gut. They reported it sterile, but he saw infections produced through the catgut. He next tried boiling it in alcohol after soaking it in formaldehyde solution. This was satisfactory, except for the trouble in preparing it. He used this method until the Claudius method was introduced. An explosion occurred while an assistant was using the formaldehyde and alcohol method. The same danger was connected with the cumol method. He formerly had used the angiotribe on account of the difficulty encountered in sterilizing catgut. The iodine method was very satisfactory, and he did not fear hemorrhage, there being little or no danger if the gut was properly tied.

DR. BOVÉE said that he realized that the iodine catgut did not tie as well as the kangaroo tendon. He made four ties and kept up the tension upon the ligature while tying. He left the ends of the knots long to prevent untying. Aqueous solution of iodine was not so good as the alcoholic solutions. By using iodine one could make the catgut resist absorption almost as long as one wished. The air-tight bottles had ground glass stoppers covered with rubber tissue. The catgut was antiseptic. The simplicity of preparation was a great thing in its favor. One could prepare it in his office. He knew no reason why 95 per cent. could not be used instead of absolute alcohol.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of June 5, 1907.

The President, DR. HERBERT R. SPENCER, in the Chair.

A short communication was read by DR. H. RUSSELL ANDREWS on

TWO CASES OF PREGNANCY IN A RUDIMENTARY UTERINE HORN.

In the first case pregnancy had occurred in a right rudimentary horn and had gone on to about eight months when the fetus died. Laparotomy was performed five months later, when suppuration had occurred. The specimen removed showed a small uterine cavity on the left side and the large right horn. The patient recovered. The second case was one of ruptured pregnancy through

the rudimentary uterine horn at about the eighth month. The pregnant horn ruptured, causing severe intraperitoneal hemorrhage. Laparotomy was performed and the pregnant horn removed, but the patient died about an hour after the operation. The fetus did not appear to be of much more than six months' development.

MISS GARRETT ANDERSON mentioned a case of cornual pregnancy on which she had operated recently. The gestation sac lay in the undeveloped right horn of the double uterus, and corresponded to about two months' pregnancy. The right ovary contained a recent corpus luteum. There was no communication between the right horn and the exterior.

A paper was read by MR. HENRY T. HICKS on

PRIMARY VAGINAL EMBOLIC CHORIO-EPITHELIOMA.

The paper is founded on a case of primary chorio-epithelioma occurring in the vagina of a woman *æt.* 28 years. A hydatid mole was passed and the growth accidentally discovered about a month later. There was no evidence of primary uterine growth. The sections showed that the growth had the structure of a chorio-epithelioma, but no villi are seen. Fourteen other cases have been collected from the literature on the subject, and the question of the degree of malignancy of this form of growth is discussed, as well as the theories as to the origin of the vaginal growths. The time at which the growth may appear in relation to the gestation is also mentioned in the paper.

The patient remained free from growth for seven months after removal of the first growth. The second growth was excised without delay, but two new foci appeared quickly. These were removed, but two months later the anterior vaginal wall became rapidly infiltrated with extensive growth, and it was decided that further operation would be hopeless. The patient, who up to this time had been comparatively well, now went downhill with great rapidity. The growth commenced to fungate into the vagina in many places, causing hemorrhage. The temperature rose, and signs of pulmonary trouble became evident. The patient died on May 8, 1907, eleven months after the passage of the mole.

The specimen removed at the autopsy was shown, together with sections and drawings of the growth. Some secondary nodules were found in the right lung.

Also another paper on

A CASE OF CHORIO-EPITHELIOMA COMPLICATED BY HEMATOMETRA,
by DRs. W. S. A. GRIFFITH and HERBERT WILLIAMSON.

The case is recorded of a lady, 42 years of age, who was delivered of a mole, probably hydatidiform, on December 30, 1905.

The patient had borne four children, the last eight years previously; her fifth pregnancy commenced in the early part of June, 1905. From August to December she suffered from numerous

small vaginal hemorrhages; from November 17 until December 29 she was under close observation, and, as no increase in the size of the uterus occurred during this period, a diagnosis of molar pregnancy was made, and abortion was induced.

A mole was expelled which, in its general characters, resembled a carneous mole, but upon the surface were seen a few vesicles.

Three weeks later (January, 1906) the patient suffered from persistent hemorrhage and the passage of clots; the uterus was explored, and a quantity of blood clot and *débris* removed.

From this time the hemorrhage ceased excepting for the loss of a very small quantity of dark blood on February 16, but the uterus again became enlarged, and pain was felt in the pelvis.

On March 3 the uterus and ovaries were removed by the abdominal route.

In November, 1906, the patient died with signs of new growth in the lungs.

The uterine cavity was greatly distended with fluid and clotted blood, the cervix being completely occluded by blood clot. A growth, of the nature of a chorio-epithelioma, was found on the anterior wall near the fundus, numerous lutein cysts were present in both ovaries.

A description of the naked eye and microscopical appearances of the parts removed is given, and special attention is drawn:

(1) To the excessive formation and wide distribution of lutein tissues throughout the ovaries.

(2) To the support afforded by this specimen to the theory that lutein cells may arise by modification of the connective tissue cells of the ovarian stroma.

(3) To the presence of a layer of necrosed tissue closely resembling Nitabuch's layer of canalized fibrin between the uterine wall and tumor outgrowths.

MR. TARGETT thought that all cases of double lutein cystic tumors of the ovary should be carefully recorded. At an operation for ovarian cyst with pregnancy at the fourth month he found the tumor consisted of thin-walled lutein cysts which partly ruptured on removal. The opposite ovary was in a similar condition. Both tumors were removed. A fortnight later the patient aborted. The fetus was macerated and the placenta was partly composed of vesicular mole. So far the patient has shown no sign of development of chorio-epithelioma.

After some remarks by Dr. Blacker, Mr. Hicks and Dr. Griffith replied.

The following specimens were shown:

DR. LONGRIDGE.—Rupture of the heart in a still-born baby.

DR. LONGRIDGE.—Specimen and drawings of dilated ureters in still-born infants.

DR. AMAND ROUTH.—Pelvic organs from a case considered to have inoperable ovarian papilloma seven years previously.

THE PRESIDENT.—Myomatous uterus, weighing seven pounds, in a patient æt. 22.

DR. BRIGGS.—Fibroid induration around a needle removed from the left labium majus. Early tubal pregnancy. Ovarian pregnancy.

REVIEWS.

PRACTICAL GYNECOLOGY. A Comprehensive Text-book for Students and Physicians. By E. E. MONTGOMERY, M.D., LL.D., Professor of Gynecology, Jefferson Medical College; Gynecologist to the Jefferson Medical College and St. Joseph's Hospital; Consulting Gynecologist to the Philadelphia Lying-in Charity and the Kensington Hospital for Women. Third Revised Edition. Pp. 970, with 574 illustrations. Philadelphia: P. Blakiston's Son & Co., 1907.

In this edition the subjects of microscopic diagnosis, gynecological bacteriology, and the pathology of carcinoma uteri have been rewritten. In addition, chapters on etiology and blood examination have been added and a number of new illustrations. The appearance of three editions of Montgomery's gynecology within three years is ample testimony to the merit of the book. It is systematically arranged, the text is conservative, and in most respects up-to-date. It is satisfactory to note, also, that the author has endeavored to strictly adhere to the titular adjective—"practical." This is particularly in evidence in the matters of diagnosis and treatment which are handled very comprehensively. The author's views on debatable topics in gynecology are, as a rule, exceedingly sound, and there is little concerning which one might differ with him. Perhaps, most objection might be raised to the author's views concerning the best operative method for cancer of the uterus. He still prefers the vaginal method, and expresses much scepticism regarding the newer and more radical methods of Wertheim, Rosthorn, etc.

In a volume of nearly 1,000 pages it would be surprising were there not a number of points toward which criticism might be directed. On page 71 one finds a long disquisition on Lustgarten's obsolete "bacillus of syphilis," while there is no mention whatever of the *Spirochæte pallida*. On page 151 the heading "Malignant Leukocytosis" might convey an erroneous impression were we not aware that the author refers to the "leukocytosis of malignant disease." On page 208, in discussing the treatment of post-anesthetic vomiting, we find no mention of gastric lavage, in our opinion the best method of treating this condition. In the discussion of the treatment of vulvovaginitis in children, we believe more emphasis should have been placed on the most important consideration—the prophylactic measures necessary in institutions,

in which this disease is most likely to occur. On page 393 the term "intercolonic" irrigation should be intracolonic. We also differ with the statement on page 618 that "the presence of a single microbe may lead to putrefaction of the placenta and sup-puration" in operations for extrauterine pregnancy. This ignores the recent studies that have shown that every "clean" wound, even if it heals by first intention, contains myriads of germs. It is surprising that we find so little space devoted to the important subjects of atmokausis and zestokausis. The former procedure is mentioned but once, on page 573, in connection with the treatment of hemorrhage in endometritis, and then only incidentally, and in a condemnatory fashion.

The weakest part of the text is that devoted to pathology. Comparatively little attention is paid to this feature, probably because the author desired to carry out his ideas of "practicality" to their fullest extent. What there is of pathology, however, requires a more thorough revision in subsequent editions. We will offer only two instances. On page 634, in discussing the glandular invasion of vulvar carcinoma, we find the statement, "The inguinal glands are first sympathetically involved and later become infiltrated with malignant cells." What does "sympathetically involved" mean? Again, in speaking of chorioepithelioma, he says: "Later investigators agree with Marchand that it arises from the syncytial cells, although there is still want of agreement as to whether these cells are maternal or fetal." In the first cells, chorioepithelioma not only arises from syncytial cells, but from the Langhans layer as well; in the second place, the tumor is of fetal origin and no other, as Marchand himself and all subsequent investigators for many years have definitely proven.

Although we have apparently devoted much space to criticism, this in reality only affects the text to a minimal degree. The vast part is excellent, and as a work for the general practitioner and student we know of no American text-book that should prove of greater value. The illustrations and typography are unusually good.

E. M.

DIAGNOSTICS OF THE DISEASES OF CHILDREN. By LEGRAND KERR, M.D., Professor of Diseases of Children in the Brooklyn Post-Graduate Medical School, etc. Pp. 542, illustrated. Philadelphia and London: W. B. Saunders Company, 1907.

The diagnosis of diseases of children is a matter which presents considerable difficulty at times, and one which intimately concerns every general practitioner as well as the pediatric specialist. The subject is unusually well presented in this volume and in a most readable form. Its plan is to take up each symptom, subjective or objective, in a general way, then as it is observed in various diseases and from the standpoint of differential diagnosis of these affections. The result is a work of real practical value. Given the cardinal symptoms of a case it is easy to trace the diagnosis

in much the same way that the botanist analyzes a plant. The illustrations are largely of methods of examination, and as such are appropriate. Those of cutaneous lesions are mostly too small and indistinct to add anything to the value of the work. The volume is destined to prove a friend to many in perplexity.

H. D.

MEDICAL JURISPRUDENCE, FORENSIC MEDICINE, AND TOXICOLOGY.

By R. A. WITTHAUS, A.M., M.D., Professor of Chemistry, Physics, and Toxicology in Cornell University, and TRACY C. BECKER, A.B., LL.D., Counsellor-at-Law, Professor of Criminal Law and Medical Jurisprudence in the University of Buffalo, with the collaboration of August Becker, Esq.; A. L. Becker, Esq.; Chas. A. Boston, Esq.; Hon. Goodwin Brown; W. N. Bullard, M.D.; J. C. Cameron, M.D.; J. Clifton Edgar, M.D.; Jas. Ewing, M.D.; E. D. Fisher, M.D.; J. C. Johnson, M.D.; D. S. Lamb, M.D.; H. P. Loomis, M.D.; W. B. Outten, M.D.; Roswell Park, M.D.; J. Parmenter, M.D.; Irving C. Rosse, M.D.; E. V. Stoddard, M.D.; George Woolsey, M.D.; J. H. Woodward, M.D. Second Edition. Vol. 2. Pp. 1,008. New York: William Wood and Company, 1907.

In our review of the first volume of this series in the *AMERICAN JOURNAL OF OBSTETRICS*, October, 1906, we ventured the opinion that if the subsequent volumes upheld the character of the first, this series should take its place as one of the standard works on the subject. After a perusal of the second volume we see no reason for changing our view. The subjects dealt with in this volume and the authors are the following: "Medico-legal Considerations of Wounds," G. Woolsey; "Medico-legal Consideration of Gun-shot Wounds," Roswell Park; "Medico-legal Relations of Electricity," W. N. Bullard; "Medico-legal Consideration of Death from Mechanical Suffocation," D. S. Lamb; "Death from Submersion," I. C. Rosse; "Determination of Survivorship," T. C. Becker and J. Parmenter; "Abortion and Infanticide," J. C. Cameron; "When Medico-legal Examination of the Living is Permitted or Required by Courts of Law," T. C. Becker; "Pregnancy, Labor, and the Puerperal State," J. Clifton Edgar; "Sexual Incapacity," I. C. Rosse; "Rape," J. C. Edgar and J. C. Johnston; "Unnatural Crimes," Irving C. Rosse; "Railway Injuries," W. B. Outten.

In a volume dealing with so many diverse subjects and with such a wealth of detail it is impossible to give an adequate review within reasonable limits. It will suffice to say that in the vast majority of instances each subject is expounded in a thorough and masterful manner, and is full worthy of the commanding reputation of the author. Particular praise is due to the editors. Most works written in a composite manner suffer from the drawback of repetition in the text. We have not noted one instance of this in the volumes thus far. For a work of such vast scope

there is surprisingly little criticism to be offered. Such as we have found are merely errors of omission, and affect only minor details. For instance, in the determination of recently healed fractures, discussed on page 22, the value of the X-ray might have been mentioned. We also believe that some mention of the peculiar traumatic asphyxia localized in the head and neck occurring as the result of crushing accidents, might have been made in the article on mechanical suffocation. On page 688 the value of the *Spirochete pallida* as a diagnostic evidence of syphilis should surely have been introduced. The illustrations on pages 587 and 588, representing bacteria in lochia could be greatly improved upon. With the exception of these minor criticisms, we have found nothing to which exception might be taken. The series, judging from the first two volumes, should prove eminently successful.

E. M.

UEBER WUNDINFEKTION. Festrede gehalten am Heftungstage der Kaiser Wilhelms-Akademie für des militärärztliche Bildungswesen, 2. Dezember, 1906. Von PROFESSOR DR. E. BUMM, Geheimer medicinalrat, Berlin, 1906. Verlag von August Hirschwald, N. W. Unter den Linden 68. Pp. 40.

This is an excellent and broad summary of the historical, theoretical, and therapeutic aspects of infection of wounds. In order are taken up the manner of infection, the reaction of bacteria to wounds, natural immunity, the virulence of the bacteria, the blood changes, and finally the treatment. The style is very lucid and the interest is kept up throughout. We know of no better short summary of this subject.

CLINICAL LECTURES ON NEURASTHENIA. By THOMAS D. SAVILL, M.D., Physician to the West End Hospital for Diseases of the Nervous System, London, and to the St. John's Hospital for Diseases of the Skin; formerly Medical Superintendent of the Paddington Infirmary, and Medical Officer to the Workhouse; Examiner in Medicine in the University of Glasgow; Assistant Physician and Pathologist to the West London Hospital, etc. Third Edition, Revised and Enlarged. Pp. 216. New York: William Wood and Company, 1907.

The volume is a series of eight lectures delivered in 1891, since which time they have been revised and enlarged. The author regards neurasthenia, in the vast majority of cases, as due to a toxemia, usually of alimentary origin. In the minority belong such etiologies as malnutrition, fatigue, emotion, shock and traumatism. In his preface, the author expresses a total lack of sympathy with the recent work on the psychological aspects of neurasthenia and the so-called effects of mind upon matter. Indeed, this side is almost entirely ignored in his lectures. The author's method of treatment consists essentially in the removal of the cause, which, of course, from the author's point of view, is nearly always a physical one. The author also believes in the

administration of many drugs, when indicated; for instance, bromides, intestinal antiseptics, hypophosphites, nerve tonics, etc. He does not always approve of the Weir-Mitchell method of treatment. Hypnotism and autosuggestion are good only in uncomplicated cases, and he believes they may even do harm in some instances. The work of Dubois, Oppenheim, etc., on the psychic treatment of neurasthenia is not mentioned. The exposition of the author is clear and systematic, and the text is interspersed with extensive and interesting casuistic material. An extensive bibliography and index are appended.

The volume summarizes the "older" conceptions of neurasthenia in a very satisfactory manner. It is unfortunate, however, that the author's bias against the newer psychic methods is so strong as not to permit him to offer even a critical review of this phase of the subject. We believe the work would be far more valuable with such an addition than as it stands at present.

E. M.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Progress and Intensity of Albuminuria in Puerperal Eclampsia and the Uratic Crises in Eclampsia.—P. Bar and R. Daunay (*L'Obstét.*, May, 1907) have followed the progress of the albuminuria in eclampsia by collecting specimens of urine every half hour and determining the amount of albumin per 1,000 grams of urine. In four cases there was no albumin before the convulsions. Immediately after the first convulsion albumin was found in the urine. The amount of albumin in most cases increased in amount in the days and hours preceding the attack. In no case has it been absent from the urine during the attack. The amount is sometimes enormous. It begins to decrease as soon as convulsions cease. The glomeruli may be filled with hyaline masses. It is possible that aceto-soluble albumins and peptones are formed in the urine from the albumins found there. But this is not their only origin. A portion comes from the blood that is thrown into the circulation during the attacks. There is a discharge of urates through the kidneys, from sixteen to eighteen hours after the attacks. Under the influence of the eclamptic poison a large number of cellular elements are destroyed and thrown out of the circulation. Thus much nuclein is liberated and this is transformed into xantho-uric compounds. The elimination of urates is comparable to that which occurs after epileptic attacks.

Decortication of the Kidney and Nephrotomy in the Treatment of Severe Forms of Eclampsia.—Felix Pieri (*Ann. de Gyn. et d'Obst.*, May, 1907) says that in eclampsia the kidney lesions vary very greatly; there may be epithelial lesions of vary-

ing severity, which remain superficial for a time, and if they do not become too marked may permit a return to the normal; there may also be intense congestive lesions, and these are responsible for the anuria in most cases of eclampsia. For such conditions surgical treatment is most valuable. The method of action of surgical treatment is triple; it reduces congestion, eliminates the changed epithelium which obstructs the canaliculi, and by modifications in the vasomotor conditions of the organ it favors the arrest of the nephritic process and the return to the normal urinary condition. Experience shows that at present four out of six severe cases of nephritis of this kind are cured by operation. There are advantages in combining nephrotomy with decortication. Operation may be bilateral. It is especially indicated in the renal forms of eclampsia, after the failure of medical treatment has become evident, particularly when the urine is very small in amount, the amount of urea and extractives eliminated is very small, and casts are frequent. Operation must be done before anuria comes on if it is to be successful in producing a cure. After anuria has set in the intoxication becomes so deep that the operation avails little.

Treatment of Eclampsia by Decapsulation of the Kidneys.—C. J. Gauss (*Zent. f. Gyn.*, June 6, 1907) finds that in spite of the conservatism of German authors as to decapsulation of the kidneys, there have been several successful cases reported there. Some patients have been saved by the operation who would undoubtedly have died without it. In such cases emptying of the uterus did not put a stop to the convulsions, and they did not cease until the kidney condition was relieved. That the numberless deaths from eclampsia may be lessened, we are justified in trying any method that is not so dangerous in itself as to increase the mortality. In seventy-five per cent. of all eclamptic cases delivery puts an end to the convulsions; in the other twenty-five per cent. life is sacrificed if no relief is obtained. The author reports two cases in the service of Krönig at Freiberg, in which great aid was rendered by the operation. Of these he gives the detailed histories. Convulsions were severe, and continued after delivery. Decapsulation was done after convulsions had gone on for several hours after delivery. After the operation only two convulsions occurred in one case. The unconsciousness was lessened, pulse and temperature fell, the amount of urine increased, and the specific gravity became normal. Albumin and casts that had been present in large amounts and numbers decreased, and recovery ensued. The question comes up whether decapsulation shall be combined with forced labor. In many cases early delivery is sufficient and the other operation is not needed; but in cases where no benefit follows delivery the other operation should be combined so as to give the patient a chance for her life which must otherwise soon be sacrificed to the uremia. It adds but a comparatively few minutes to the anesthesia necessary for the artificial labor.

Treatment of Eclamptic Convulsions by Lumbar Puncture.

—Audebert and Fournier (*Ann. de Gyn. et d'Obst.*, June, 1907) describe encephalic lesions as very frequent in eclampsia; such are cerebral edema, congestion, meningeal hyperemia, and large and small hemorrhages. In many cases the cranial sinuses are much dilated. Cerebrospinal hypertension exists both before and during the convulsive stage. If the convulsions are the result of this hypertension the subtraction of fluid from the lumbar region of the spinal canal should relieve the symptoms. Careful observations of the pressure in the spinal canal have shown it to be very high. Also, when puncture is made, the fluid flows out bloody and with a considerable force. The author has treated two cases by lumbar puncture and has collected forty-four other cases. The object of the treatment is not to act on the kidney condition, but simply to diminish the cerebral pressure and combat symptoms due to that condition. A decompression of the nervous tissues is brought about and a favorable effect on the convulsions and coma is observed. One of the author's cases recovered after having had six seizures before puncture. Afterward she had three much less severe attacks, and coma was less deep. The second case died of complications, although the brain symptoms were much benefited by the puncture. The authors believe that while this is not the choice of treatments, still it should be used in combination with other reliable means of relief when coma is profound and convulsions are severe, with a high tension of the cerebrospinal fluid. There need be no bad results from such treatment when properly applied.

Delivery by Bossi's Dilator in Eclampsia.—R. Schockaert (*Bull. de la Soc. Belge de Gyn. et d'Obst.*, Vol. XVIII., No. 1, 1907) says that the modern theory of the causation of eclampsia is that of autointoxication by products of the life of the fetus. Rapid evacuation of the uterus is the rational remedy for the condition. When the cervix is dilatable delivery by forceps or version is best, but when the cervix is closed and labor has not begun other interference becomes necessary. In multiparæ manual dilatation may serve to open the cervix. In primiparæ this is impossible, and some form of instrumental dilatation becomes necessary in severe cases with repeated convulsions. The author rejects the use of the Cesarean section and the cervical incisions of Dührssen in private practice. The use of Bossi's dilator is eminently appropriate, as dilating rapidly without danger. The author reports three successful cases of exceptional gravity, accompanied by frequent and violent convulsions, in which life was saved. This is the only instrument that permits of sufficient dilatation for delivery. Its advantages are its small size and lack of formidable aspect, its lightness, the ease with which the amount of dilatation can be ascertained by reading the scale, the ability to dilate very slowly, ease of disinfection, and cheapness. The only precaution necessary is to dilate slowly and feel with the hand what work is being done.

Menstruation During Pregnancy.—J. Descamps (*Bull. de la Soc. Belge de Gyn. et d'Obst.*, Vol. XVIII., No. 1, 1907) accepts the view that menstruation during pregnancy does not exist in the form of normal hemorrhages, with natural periods between. The hemorrhages which occur are irregular and have not a normal character. He believes them to be due to metritis with ulcerations of the cervical canal, which bleed and account for the hemorrhages that occur. This condition exists generally during the first three months, but may go on up to the last months of pregnancy. The old idea was that the causes may be traumatic, or spontaneous, such as rupture of a varicocele, fibromata, or cancerous ulceration. By the use of the speculum the blood may be seen to come from the cervix. This condition may be simple, or may result in abortion or infection after labor. The author advocates immediate treatment by cauterization of the ulcers, followed by tamponade of the vagina until healing takes place. Pregnant women should make use of cleansing douches when there is discharge.

Fibroids Complicated by Pregnancy.—James Vance (*N. Y. Med. Jour.*, May 18) states that all cases of fibroids complicated by pregnancy should be treated surgically and not obstetrically. Myomectomy should be performed only in cases found suitable for this operation. It is dangerous otherwise. Cesarean section should be done for all cases of fibroids complicated by pregnancy at term. All cases of abortion or miscarriage which cannot be stopped should be immediately submitted to hysterectomy. All cases with pressure symptoms or any other cause endangering the life of the mother should have hysterectomy performed. Craniotomy is bad practice at any time, and never justifiable when the child is alive.

Pregnancy in Patients with One Kidney.—Jas. H. Ferguson (*Jour. Obst. and Gyn., Brit. Emp.*, March, 1907) believes it would be preferable to have these patients wait until after the child-bearing period before marrying. This not always being possible, he is strongly inclined to urge in the interest of prudence that marriage be delayed until at least three years after the operation of nephrectomy, so as to give ample time for compensatory changes to occur in the remaining healthy kidney. When the remaining kidney is diseased marriage should be out of the question. The above applies equally to those cases with only one functioning kidney. When pregnancy does occur these patients must be closely watched from the beginning for any renal irritation or deficiency. The author reports a case of pregnancy in a woman whose kidney had been removed ten years before on account of a tubercular lesion. This patient had albuminuria which yielded fairly satisfactorily to treatment. At term craniotomy was performed on account of pelvic deformity. The puerperium was uneventful. Albumin disappeared.

Complete Rupture of the Pregnant Uterus.—R. W. Loben-

stine (*Bull. Lying-in Hosp., N. Y.*, March, 1907) reports a series of thirty-seven cases in which spontaneous rupture was due to pelvic contraction in seventeen cases and to a feeble scar after amputation of the cervix in one. Traumatic rupture due to high forceps occurred in two cases, to internal prostatic version in twelve, to accouchement forcé in four, and embryotomy caused one. There were nineteen cases probably starting as the longitudinal type, while seventeen probably started as the transverse; one occurred at the fundus. The child escaped into the abdominal cavity in five cases. The mortality of this series was 73 per cent. Twenty-three were treated by hysterectomy with a mortality of 60 per cent.; fourteen treated by packing had a mortality of 92 per cent. Rupture having occurred, the child should be delivered at once. If the child is not entirely free in the peritoneal cavity, it can as a rule be delivered by the vagina. If free in the peritoneal cavity, one will, as a rule, have to perform a laparotomy. The writer believes laparotomy should be performed as soon as possible in all cases of complete rupture, with two exceptions: (a) Clean cases with small amount of damage, with hemorrhage easily controlled by packing; (b) bad cases with marked shock. After laparotomy we find that hysterectomy is the most satisfactory operation in the majority of cases. Suturing the uterine wound can be resorted to in only the simple, uncomplicated cases. The danger of sepsis is so great that it is a very important reason for removing the uterus.

Incomplete Abortion.—Archibald R. Small (*Amer. Jour. Surg.*, May, 1907) strongly advises the use of the sharp curette in treating incomplete abortion. Immediately upon making a diagnosis he proceeds to empty the uterus by means of the finger if possible; otherwise he uses a sharp spoon curette. The force used should be just sufficient to separate the membranes. After the uterus is thoroughly cleansed it should be washed out with sterile water by means of a recurrent tube. If there is any suspicion of sepsis the endometrium is swabbed with 95 per cent. carbolic acid, followed by alcohol. The uterus is then packed lightly with iodoform gauze, and the patient is placed in bed. After miscarriage or premature labor, where the uterine tissues are soft, he uses a large, dull loop with a fenestrum.

Frequency of Various Causes of Premature Labor.—B. Seropian (*Jour. de Méd. de Paris*, June 2, 1907) has tabulated the causes of abortion among 5,000 cases at the Baudelocque. His results are these: absence of hygiene during pregnancy with sexual excess and professional fatigue act on the insertion of the placenta. Low insertion of the placenta predisposes to abortion under these conditions, and this is the most frequent cause. Next comes an abnormal position of the ovum: twin pregnancy, hydramnios, and malinsertion of the cord. Endometritis and diseases of the decidua come next in frequency. Malformations of

the uterus and fibromata form another class. General diseases, such as syphilis, come next in frequency. Albuminuria, intoxication, infectious diseases, tuberculosis, and cardiopathies are included in this class, and are the least frequent causes.

Pubiotomy.—Richard C. Norris (*N. Y. Med. Jour.*, March 30, 1907) states that the indications for this operation are the same as the relative indication of Cesarean section, *i.e.* a conjugata vera of 7 cm. The space gained is about the same as is secured by symphyseotomy with equal separation of the bones. The advantage of pubiotomy lies in the fact that the supports of the bladder, urethra, clitoris and structures behind the symphysis are not only not cut, but are not likely to be lacerated. Laceration of the vagina and hemorrhage have been the most frequent accidents. The writer reports a case of successful delivery of a living child after this operation. He believes that in the hands of the average surgeon in private practice this operation is safer than Cesarean section.

Pubiotomy in Private Practice.—W. Sigwart (*Zent. f. Gyn.*, May 18, 1907) advocates the use of pubiotomy in suitable cases in private as well as hospital practice. Symphyseotomy was an operation that was necessarily confined to hospital practice, owing to the need of assistants and the necessity for absolute asepsis in the surroundings. Pubiotomy by the subcutaneous method need involve no danger of infection. It may be done in the dwellings of the poor, with the assistance of students, or even of the laity, provided the operator can obtain sufficient light and room, and a firm table, on both sides of which the operator can pass. Few instruments and dressings are needed; hemorrhage is very moderate, and occurs in the form of a small hematoma contained within the tissues. The author has done pubiotomy five times in the patient's own house, and all the patients have recovered perfectly, with a firm gait and no disabilities. All the children have been delivered alive. All the instruments that he needed were a pubiotomy needle and some ordinary needles armed with sterilized catgut and sterilized gauze for tampons. It is well to have two flat specula to protect the vagina during artificial delivery of the child. The author describes his five cases. Labor was normal and without much pain. There were no lesions of the vagina during delivery. The only complication was a small abscess from a subcutaneous hematoma. The labor can be shortened by performing pubiotomy as soon as the head is fixed by the contractions. In multipare with well-stretched genitals a not too rapid forceps operation may be done without any damage to the parts. The extraction can be done without stopping the anesthesia, which is a great advantage in a private house. The after-treatment is very simple: a piece of gauze and some cotton, and a bit of plaster over the puncture, a towel about the pelvis, and for one week a catheter retained in the urethra include all that is necessary. At the end of three weeks the patient may get up. Forty patients

operated on in this way in the clinic have all been cured. Lesions of the bladder have been few and of little importance. The same may be said of hematomata. If the section is made near the median line the pelvis separates easily and not too far. When it is too far out results are not so good. Any experienced physician accustomed to handle instruments and obstetric operations may successfully accomplish pubiotomy in a private house.

Occurrence of Hernia in the Pubiotomy Section.—J. Hartmann (*Zent. f. Gyn.*, May 25, 1907) describes a case of hernia at the location of a hebotomy section, in which the ends of the bones were separated fifteen centimeters after operation. The further from the center of the symphysis the section is made the smaller is the amount of callus formed, and the greater the separation. When the tuberososacral and spinosacral ligaments are injured by twisting of the sacroiliac articulation the bones are allowed to separate very widely in front and hernia is thereby favored. The muscular fibers of the anterior pelvic walls are torn by the springing apart of the bones or are injured in the section. The least injury will be received if the line of section is made slanting from below toward the median line.

Gigli's Operation in Obstetric Practice.—Ballenghien (*Jour. des Sci. Méd. de Lille*, June 1 and 8, 1907) gives his reasons for believing that the lateral section of the pubes, an operation that is not severe, and is easy to do, necessitating only a small number of instruments, should be made use of in pelvic contractions of slight degree. This operation can be done in the home of the patient without fear of infection. In many cases it is necessary that the child should be delivered at term; otherwise it will not live. In the home of the workingman the bringing up of the premature baby is impossible. Hence premature delivery should be discarded. Such operations as the Cesarean section can be done only in the hospital. The mortality of the operation of pubiotomy for the mother is practical *nil*, and the children all live. Tearing of the vagina and bladder are rare. Hematomata are unimportant, and infection seldom occurs, while the puerperal state is quite normal. A permanent osseous union may be obtained by a firm band and rest in bed for four weeks. The author thinks that it is much better to keep the patient quiet longer and have osseous union than to get only fibrous union. The author records two successful cases done in the homes of the poor. He sees no advantage in using the subcutaneous method. The incision should be sufficiently oblique from above downward to pass outside the sub-pubic tubercle. If the section passes too near the spine of the pubes it is in danger of lacerating the external fibers of the inguinal ring. When too near the symphysis it endangers the bladder and the corpus cavernosum of the clitoris. Hernia is rare.

Cesarean Section.—Arthur J. Wallace (*Pract.*, Mar., 1907) reports sixteen cases of Cesarean section. Of these, thirteen were for pelvic deformity, and three were performed on account of

tumors obstructing delivery. Eventration of the uterus was done at only the first operation, and from his later knowledge he believes it should be employed only when the existence of sepsis is suspected and when the intention is to terminate the operation by Porro's modification. The incision in the uterus is best made so as to avoid the placental site. In diagnosing the site of the placenta, we take into consideration the width of the uterus anteriorly and posteriorly. The surface, having the greater width, generally has the placenta attached to it. A bulging, soft surface invariably implies an underlying placenta; the presence of a venous network also indicates its site. The writer employed the anterior vertical incision in preference to the "Fundalschnitt" for the reasons that eventration was unnecessary, and that adhesions formed between the uterus and parietal walls, thus doing away with dangerous adhesions between the uterus and intestines, and also making a later section easier if necessary. In all the cases the hemorrhage was easily controlled by pressure. In suturing the uterus it is best to use three layers of sutures, one including the decidua and part of the muscular wall, the second layer muscle only, and the third muscle and peritoneum. If there is a possibility of future pregnancies the uterus should be sutured to the abdominal wall, so as to make sure that firm adhesions will form, thus facilitating a later operation. In the above-mentioned series of sixteen cases, one mother died of sepsis, making the mortality 6.25 per cent. All the children were delivered alive. Prolonged manipulation before the Cesarean section may imply infection of the vagina and even of the uterus, and in either case a hysterectomy would lessen the risk of sepsis.

The Present Knowledge of the Streptococcus as it Affects the Obstetrician.—W. Zangemeister (*Münch. Med. Woch.*, May 21, 1907) says that at the present time one in every thousand women in labor in Germany dies of puerperal fever. The streptococcus is an important factor in this mortality. In the lochia of puerperal women the streptococcus is found in 100 per cent. of all cases of puerperal fever. In exudative parametritis it is found in 73 per cent.; in puerperal endometritis, in 27 per cent. We know that a severe streptococcus infection may be carried from one infected woman to another, as well as become generalized, from a wound, in the entire organism of the same person. We find that animals have a resistance to the infection, and produce antitoxins in the blood. It is not always easy to infect animals with streptococci from the human race and *vice versa*. Such being the case, when infection occurs it may result from failure of the natural means of protection, insufficiency of the leukocyte-forming apparatus, or from the existence of a focus of lessened resistance from a wounded surface. That streptococci exist in a saprophytic condition in the female vagina is known. Most of these organisms are removed by vaginal injections. There is no hard-and-fast division between the varieties of streptococci. Virulence for one

animal does not necessarily mean virulence for another. The author considers it possible that the infection may occur from the saprophytic germs in the vagina which become virulent. For immunization of patients it is necessary that the organism used be virulent for the individual. Only living germs confer immunity. In order to confer immunity a severe effect must be produced by the injection, otherwise the effect will be too slight to be of value. Hence active immunization will not be found possible. Passive immunization remains to be considered; but this fails also. One working hypothesis remains. In time we may immunize one individual from another.

GYNECOLOGY AND ABDOMINAL SURGERY.

Bier's Hyperemia in Gynecological Treatment.—L. Nenedovics (*Gyn. Rund.*, H. 9) believes that both active and passive hyperemia are of use in gynecology. Originally it was believed that passive hyperemia was of most value in acute and bacterial diseases. It is much more difficult to apply suction to the contents of the pelvis than to regions on the surface of the body, on account of their deep location. Suction causes pain in the deeper organs, and the author believes that it is contraindicated in acute inflammations and bacterial infections. In other gynecological diseases in which suction is not dangerous, active hyperemia is found to be better than the passive, since it causes better absorption of injurious products. For the production of active hyperemia the author has arranged a new form of apparatus which he describes, consisting of a glass cylinder which is placed over the cervix uteri. It has two pipes connected with it of small caliber, so arranged as to produce a rhythmically changing suction of air. This results in an active hyperemia, which is at first somewhat painful. If the patient allows it to go on it soon becomes painless, and no bad results occur. This method is useful in all conditions of the genital organs exclusive of tumors and acute and bacterial diseases, in which hot irrigations are better. The secretion of the inside of the uterus is better removed by this rhythmical suction than by any other method.

Early Mobilization after Gynecological Operations.—Abram Brothers (*Med. Rec.*, March 23, 1907) finds that early mobilization tends to overcome ordinary vomiting, accumulation of intestinal flatus, and bronchial irritation from retained secretions in the air passages. In the absence of septic infection early moving about actually tends to reduce the risk of thrombosis and embolism. The morale is always improved, and the tendency to debility, hysteria and mental depression and anxiety is diminished. Neither the character nor the magnitude of an operation necessarily debars early mobilization.

Gynecological Case Reports.—Thomas S. Cullen (*Jour. Amer. Med. Assn.*, May 4, 1907) reports the successful removal of an 89-pound myoma from a woman fifty-eight years old. At

the time of the operation the patient was unable to lie down; so it was performed with the patient in the sitting position. The tumor was densely adherent to the anterior and lateral walls. Very large vessels spread over the tumor; these were omental in origin, with some from the stomach and liver. Recovery good. The writer also reports an 18-pound parasitic myoma with marked development of the omental vessels, some reaching one centimeter in diameter. This tumor derived nearly its entire supply of blood from the omentum. Another case reported is that of a woman aged twenty-one, from whom he removed a uterus containing a dead fetus. Following the death of the fetus suppuration had taken place and perforation of the uterine walls occurred. At the time of the removal of the uterus it was found to be adherent to the anterior abdominal wall, and in this area were found numerous perforations from which large quantities of pus came. The uterus was amputated at the cervix and a gauze drain was inserted into the lower abdomen. Recovery uninterrupted. A fourth case reported was that of a colored woman, aged twenty-eight, who gave a history of pregnancy going apparently to term. Labor pains developed and soon ceased, and the patient retained a tumor. This tumor existed for four years, giving little trouble until just before operation. At the operation the writer found an abdominal pregnancy firmly adherent to the surrounding tissues and to both tubes. The gestation sac was removed with considerable difficulty on account of the marked bleeding. Recovery good. A fifth case is one of chorioepithelioma in which the uterus at the time of the operation had obtained the size of a five months' pregnancy. The growth was uniformly distributed throughout the entire uterine body. Hysterectomy was performed and the patient apparently recovered.

Chronic Pelvic Infections.—Franklin H. Martin (*Surg., Gyn., and Obst.*, April, 1907), in discussing the chronic pelvic infections peculiar to women, gives the routes of infection as follows: (1) by the lymphatics of the uterus and broad ligament, (2) by direct extension along the mucous membrane of the uterus and tubes, (3) by traumatism. Ninety-six per cent. of the cases of pelvic infection treated by the author have been intraperitoneal infections, the result of direct infection extending along the mucous membrane. The greater number of these were treated by laparotomy, as this operation gives the minimum immediate mortality. It enables one to examine the other organs and note complications, and to do a thorough enucleation or repair of the diseased tubes. The immediate and permanent results are very satisfactory. In dealing with a simple pyosalpinx he places the tube between a thick gauze pad and forcibly milks the tube in the direction of the fimbriated end, thus forcing its contents out. The tube is then washed out with hydrogen peroxide or squeezed in a gauze pad saturated with an antiseptic. This procedure often leaves a serviceable tube. The treatment of bilateral tubal or tuboovarian abscesses with peritoneal adhesions consists

in first freeing the adhesions, then extirpating the tubes and ovaries if they are destroyed beyond repair. Large bilateral abscesses with peritoneal extension and general walling-off by adherent intestines and omentum, the writer treats by enucleation if possible, if not, by vaginal drainage, guided from above through an abdominal incision. In enucleating there are three places at which one must look for a beginning point in separating the encysted abscess mass from the impacted adjacent tissues. One is from Douglas's cul-de-sac, after carefully following the posterior surface of the uterus to that point. A second is at the point of the junction of the uteroovarian ligament with the uterus, and the other is behind the infundibuliform ligament. Each of these places should be tried in turn in the order named. It is imperative to keep close to the abscess sac, thus avoiding puncture of the intestines.

Relations Between Acromegaly and the Sexual Function in Women.—Serafino Patellani (*Ann. di Ostet. e Gin.*, March and April, 1907) has collected and analyzed 145 cases of acromegaly in women, with reference to its relations to the sexual functions. His conclusions are given as follows: The importance of an altered genital function in acromegaly is demonstrated especially by arrested menstruation. It is important to distinguish between the cephalic and initial, and paraacromegalic forms. In women the classic form begins with the sexual period, never before puberty or after the menopause. Arrest of menstruation may result from accident, infectious diseases, prolonged lactation and uterine atrophy. The normal menopause may be considered a physiological acromegaly. Regular menstruation excludes acromegaly from consideration. Amenorrhea is not simply a symptom of acromegaly, but bears a causal relation to it. Pregnancy may occur with acromegaly, but lactation will hasten the progress of the disease. Ovulation may continue during the disease. The amenorrhea may result from atrophy of the uterus due to lactation. Lactation in a woman who has had scanty menstruation should be carefully watched. In all cases in which the genitals were examined in life or after death the genital organs were found atrophied or small. The disease occurs especially between the ages of twenty-one and twenty-five. It occurs more frequently in virgins and sterile married women, and the course is more rapid in them than in other patients. It may be unobserved for from one to five years. It favors sterility. Castration is of no therapeutic value. Experimental studies of the hypophysis show that its function is to regulate metabolism, and its destruction causes poisoning from accumulation of toxic substances.

Ovarian Influence Upon the Uterus.—F. H. A. Marshall and W. A. Jolly (*Edin. Med. Jour.*, March 1907) believe that the existence of ovarian tissue is essential to normal uterine nutrition, and further that the nature of the ovarian influence is chemical rather than nervous. It is extremely probable that the uterus is

dependent for its proper nutrition upon substances secreted by the ovaries, not merely at the heat periods and during pregnancy, when they show their greatest activity, but throughout the whole of the estrous cycle.

Trypsin in Cancer.—John W. Luther (*N. Y. Med. Jour.*, Feb. 23, 1907) finds that it is the consensus of opinion of all those who have applied the treatment that whatever else the treatment may effect, it certainly does in most cases cause (1) an arrest or shrinkage of the growth; (2) improvement in the general nutrition and appetite, and maintenance or increase of weight; (3) diminution or cessation of pain; (4) diminution in the discharge, with a decrease of fetor.

Remote Results of Treatment of Cancer of the Breast.—E. Villard and E. Mouriquand (*Lyon Méd.*, May 19, 1907) regard the prognosis of cases of cancer of the breast as much better when the axillary glands are not involved. Many cases may be cured by early operation, and any tumor of the breast after thirty years of age should be removed at once, even if it appears benign, on account of the liability to degeneration into a malignant form. When the operation has been done thoroughly with removal of all glands, of the tumor wide of its borders, and of the aponeurosis and the pectoral muscles when the tumor is adherent, the use of radiotherapy on the resultant scar serves to sterilize all the remaining tissues, and to prevent recurrence. In this field it is most beneficial. In some cases of recurrence its use is dangerous, since it provokes a dangerous glandular reaction. The effect in most tumors is to reduce the size of the tumor and cause destruction of the cellular elements. Of the fifty cases treated in the service of E. Villard, twenty-two are living without recurrences, and five with recurrences that have probably been cured by X-rays. They were all undoubted cases of cancer, and all but twelve were confirmed by microscopical examination. It is now from eighteen months to eleven years since the operations. In twenty-eight cases in which the glands were examined, one-half were found involved and one-half were not, but the proportion of cures was much greater in those in which there was no glandular involvement.

Suppurative Mastitis after Typhoid.—Henri Roger (*Gaz. des Hôp.*, May 18, 1907) finds that suppuration of the mammary gland is a rare complication of typhoid fever, occurring during convalescence, or even later. It is not always produced by the same bacillus, the *Staphylococcus aureus*, *Staphylococcus albus*, bacillus of Eberth, and paratyphoid bacillus all having been found in the pus. Previous lactation favors the occurrence of this complication. The symptoms are unimportant, pain and fever being slight, and the abscess healing easily after incision. Only twenty-four cases are recorded in literature. The author describes a case in which after a very severe typhoid, characterized by vomiting, myocarditis, and dyspnea of bulbar origin with cyanosis, at the end of convalescence the left mammary gland became swollen

without much pain. The abscess was opened and soon healed. The paratyphoid bacillus, or one very much resembling it, was found in the pus.

Palliative Surgical Treatment of Cancer of the Cervix Uteri.

—F. Jayle (*La Presse Méd.*, May 25, 1907) says that in many cases of cancer of the cervix all the palliative treatment that can be attempted is the curettage of the fungosities and their cauterization with the actual cautery. There are some cases, however, in which something more can be done. Women who are still menstruating show a more rapid advance of the disease than those that have passed the menopause. The afflux of blood to the uterus causes more pronounced anemia, and there is more rapid cellular proliferation. In women who have passed the menopause castration is indicated because it brings about the obliteration of the uteroovarian artery and stops the internal secretion of the ovary, which still persists after the menopause and prevents the atrophy of the uterus, thus favoring the development of the cancer. Some advise the ligation of the uteroovarian artery, but this is very difficult to do on account of the extensive lesions. A laparotomy for removal of the ovaries, with ligation of the hypogastric arteries, is the best procedure, even when the cancerous tissues cannot be removed entirely. If there are fungosities they should be curetted and cauterized at the same time.

Cancer of the Uterus.—O. Laurent (*La Revue Medico-Sociale*, June 10, 1907) summarizes the definition of cancer as a disease that is often latent and insidious, manifesting itself by the triad of symptoms, pain, hemorrhage, and leucorrhea. Pain results from infiltration of Douglas's cul-de-sac, pressure on the sacral nerves, and concomitant metritis, while it may be absent in the ulcerations produced by the disease. It is especially early in cancer of the body. The lymphatics and parametrium may be invaded early or very late. The ligaments are early attacked in most cases. Cancer of the body is slower and less malignant than that of the cervix. Duration is from six months to eight years. One-third of the cases of cancer of the uterus are of the cervix. It may be pavement epithelioma, cylindrical, or atypical epithelioma. In form it may be papillary, nodular, or excavating. Cancer of the body may be primary or secondary to that of the cervix. It is a cylindrical epithelioma, circumscribed or diffuse. Cancer extends to the vagina, adnexa, parametrium, glands, ureters, bladder, peritoneum, heart, and by metastasis to the other internal organs. It has to be distinguished from chronic metritis, benign papilloma, fibroma uteri, and polypus. It is more brilliant and granular than metritis, and more friable. Benign papilloma does not present condylomatous growths. Fibromata or papillomata of the cervix appear with the ring of the cervix surrounding them.

When Shall Myomata Be Removed?—Wiesswange (*Münch. Med. Woch.*, May 21, 1907) says that the mortality among 2,500 operations for myomata was for abdominal 6.8 per cent. and for

vaginal 2.2 per cent. The question of operation depends on various factors. One of these is the location of the myoma, whether subserous, intramural, submucous, or intraligamentous. Another important consideration is whether it springs from embryonal remains, gland structure, or musculature. Submucous myomata generally give symptoms that are of importance, most frequently hemorrhage and pain. Hemorrhage may be of any grade of severity. If severe, operation is demanded. Pain will also vary. The diagnosis of this form is difficult with a closed cervix. Dilatation is a diagnostic aid that may be necessary, and removal of a fragment and its microscopic examination will be of value. It is often necessary to remove such growths to make life endurable and useful. Another danger is necrosis of the growth, with possible infection of the patient. Such an ending is not at all to be desired, but it is the only way of getting rid of the growth outside of operation. The growth may also become sarcomatous. The author believes that every submucous fibroid should be removed. With the subserous it is quite different. Profuse hemorrhage is rare, and pressure symptoms alone are of importance. Conception and successful delivery may take place normally. Only when these tumors become very large is removal imperative. The intramural and interstitial forms give the least trouble of all. Multiple fibromata are often harmless. Only very large and rapidly growing interstitial myomata require removal. The intraligamentous form gives severe pressure symptoms. Each individual case must be considered separately. The earlier in life the growth appears the better is the prognosis of operation. In young individuals conservative work may be done. The nearer the climacteric the longer may we delay operation. Unoperated cases should remain under careful observation.

Uterine Curettage.—H. T. Hicks (*Pract.*, May, 1907) finds the sharp curette the best instrument for ordinary cases not connected with pregnancy or abortion, but if pregnancy or an abortion has occurred within a month the blunt instrument should be used. Further, in curetting for diagnostic purposes, the blunt instrument is preferable. A blunt flushing curette is very useful to employ after curettage with the sharp instrument.

Ovarian Grafting.—E. Scott Carmichael (*Jour. Obst. and Gyn., Brit. Emp.*, March, 1907) makes these deductions from experiments on animals: That it is unlikely that the whole human ovary can be grafted with success; that part of the ovary may ovulate and preserve its function of internal secretion; that partial grafting is more likely to succeed, *i.e.* the grafting of the cortical portions of the ovary more especially.

Vaginal Operation for Descent of the Ovaries.—H. Rose (*Zent. f. Gyn.*, June 8, 1907) discusses the operative treatment of displaced ovaries that are macroscopically normal, or only inflamed, showing no new growths. These can be treated conservatively. If there are small cysts they may be cauterized. Ovaries

that are more diseased should be removed. A prolapsed ovary may be freely movable, or adherent; the firmer the adhesions the less chance is there of cure. The displacement may consist in a descent of the outer and upper pole, or of the whole gland, or of both. The inner pole alone cannot descend. In congenital descent of unenlarged ovaries we must suppose that the ovarian ligament is abnormally long and flaccid, and Douglas's cul-de-sac abnormally deep. The condition of prolapsus may result from acute prolapse of uterus and ovaries and acute inversion of the uterus, but in general it results from chronic causes. The force may be exerted directly on the ovarian suspensory ligament from the increased weight of the ovary through inflammation or tumors, or from pregnancy, retroflexion, and version of the uterus, dragging the ovary down with the uterus. The abnormal length of the ovarian ligament is the central point for the author's operation, which consists in a shortening of this ligament after colpotomy. The tube is excised when necessary, leaving the uterine end in place. The author describes a case successfully operated on after his method.

Treatment of Severe Cases of Vesico-vaginal Fistula.—Richelot (*Prog. Méd.*, June 15, 1907) regards the operation of Duboue called *dédoublement* as a good procedure for repair of vesico-vaginal fistula of great severity. It causes no loss of substance, and no violent drawing together of tissues that are widely separated. It makes use of two flaps that are easy to bring together. A similar procedure is that introduced by Braquehay, which also uses two flaps easily brought together with sutures in two planes closed from the periphery toward the center. A circular incision is made all around the fistula, and a collar of tissue is dissected deeply around it. This collarette is left adherent so as to give more tissue to work with than the other procedure does. By this means the fistula is closed without straining the tissues. There are left large, freshened surfaces, which are brought together and sutured. The sound is not left in place, but catheterization is used at intervals of two hours, the patient lying on the side, so that the urine does not fall upon the base of the bladder.

DISEASES OF CHILDREN.

Treatment of Rickets.—Concerning the treatment of rickets, G. A. Sutherland (*Clin. Jour.*, March 13, 1907) says that the first indication is to clear out the alimentary canal with ten to fifteen minims of castor oil and five to ten minims of tincture of rhubarb three times a day. At the same time the child should be put on milk and barley water and lime water, equal parts, giving four or five ounces every three hours. After a few days or weeks increase the strength of the milk gradually. Fresh cow's milk is the great stand-by. The chief rules to remember in regard to the dietary are avoid any deficiency in fats and avoid any excess of carbohydrates. Every means of strengthening the child must

be employed, sunshine, fresh air, flannel clothing, and baths twice a day. The intestinal tone will not be restored for some time, and it is well to give as a tonic a couple of minims of tincture of nux vomica, five minims of tincture of rhubarb, and three or four grains of sulphocarbolate of soda. The most important drug is cod-liver oil. The chief complications of rickets—bronchitis, diarrhea, convulsions, laryngismus stridulus, and tetany—must be treated on general lines while acute, but subsequently antirachitic treatment alone is efficacious. For antero-posterior spinal curvature the child should be kept lying constantly upon the back, while the latter is strengthened by massage and douching of the spine, using hot water if under eighteen months of age, cold after that time. For deformities of the ribs it is well to strengthen the intercostal muscles by restricting diaphragmatic breathing for one-half to one hour twice a day by means of a flannel band around the abdomen. If the child does not walk do not encourage him to do so, and thus avoid deformities of the lower extremities.

A New Method of Phosphorus Feeding and Administration in Children.—Carl Manchot (*Münch. Med. Woch.*, March 19, 1907) says that, according to the opinion of specialists in children's diseases, the treatment of rickets and disturbances dependent on the internal nervous system is best accomplished by nourishing the central nervous system with some remedy that acts as a curative means. For this use phosphorus is the best substance to employ; but there are difficulties in its administration on account of the poisonous qualities of the chemicals. Phosphorus in the organic combination with cod-liver oil has been much used, but it is a nauseous dose and must be used with great care to prevent poisoning. The combination changes its chemical nature rapidly and after a week or two becomes inert. In the Children's Hospital at Hamburg the author has made experiments as to the best method of administering phosphorus. He first tried a combination with butter, prepared fresh daily, but the preparation was inert. Then he tried injections of a weak solution of phosphorus and obtained great and rapid benefits, the color improving, increase in weight taking place, and the nutrition improving. But after two weeks' use subcutaneous abscesses developed at the point of injection which were difficult to heal. The organic combination of phosphorus in human milk seems to be the best for children, and the author sought some other organic combination to take the place of milk as a food that would have therapeutic value. Phytin, a combination made from the seeds of grains, was tried. It contains calcium and magnesium in organic combination with phosphorus, and is free from the other constituents of the plants employed in its preparation. But it is very difficult to dissolve in water and was found practically useless. The author's next trial was of hemp seeds prepared by extraction of the oil by petroleum from the fine meal. This meal is then slowly boiled and strained until there is obtained a thin, milky, whitish-brown

broth of acid reaction. From thirty to fifty cubic centimeters of this preparation were given in each bottle to the infants. It may be mixed with buttermilk, malt soup, etc., to disguise the taste. The older children ate the soup mixed with broth or milk and liked it. One hundred and one children were thus fed. The good results were rapid; there was increase in weight, improved color, and consistence of the skin, increase of muscular strength and of energy. Children that had been unable to walk were soon walking. The sweating of the rachitic children was benefited and their anemia improved. The number of red blood corpuscles increased as well as their hemoglobin. The bone lesions improved and craniotabes disappeared. In those children who had diseases complicated with convulsive seizures the same general improvement took place, and the seizures were soon lessened in number and severity. The author believes that he has found a useful method of administering phosphorus that has no dangers and is easy to prepare and moderately stable.

Medical Treatment of Congenital Pyloric Stenosis.—The aim of this treatment, says G. A. Sutherland (*Lancet*, March 16, 1907), is to remove any source of irritation in the stomach which may maintain pyloric spasm, and to keep the organ free from any irritating food which may excite such spasm. Each feeding should be limited to two or three ounces, and in bad cases to one ounce, increasing the frequency in order to supply sufficient nourishment. Small quantities of water may be given in the intervals for thirst. If good breast milk is available it is the best food. If cow's milk is employed it is better to peptonize it. The stomach should be washed out daily for a prolonged period, and in bad cases twice a day for a time, preferably when it should be empty. These infants cannot be fattened quickly, and attempts to do so are usually disastrous. Any excess of food is liable to produce digestive disturbance. Diarrhea is a common complication, which, like flatulence, is best treated by reducing the amount of food given by one-half. When vomiting occurs food should be given for two hours. The use of antispasmodic drugs has not proved of value. With marasmic infants saline injections, both rectal and subcutaneous, have seemed beneficial. If the infant is much reduced or has a subnormal temperature, brandy up to half a dram daily is of service.

Ankylostoma Anemia in Children.—Olimpie Cozzoline (*La Pediatrca*, March, 1907) describes two cases of infection with ankylostoma duodenale in children that were fatal. All the members of the family showed the parasite in the stools. It is a cylindrical worm varying in length from eight to twelve millimeters. The mouth is provided with four hooks, by which it fastens itself to the intestinal walls for the purpose of sucking the blood to feed upon. The number of ova produced is enormous, four million having been counted in a single stool. When passed the ova change to larvæ with an impenetrable covering which protects

them for about fifty days. They may be carried to the new host by unclean hands or in infected water. The effect on the patient is to cause a severe anemia, which, according to some, results from the abstraction of blood alone, while according to others the parasite produces excretions that are poisoned to the system. A high grade of anemia is produced, and there are leukocytosis and eosinophilia. The treatment consists of a course of anthelmintics, consisting of *felix mas* or *thymol*, which is to be repeated after a few weeks. Even after the parasites are all removed the anemia may still not be recovered from, and may cause death.

Cerebral Syphilis in Children.—A. W. Fairbanks (*Jour. Amer. Med. Ass'n*, March 9 and 16, 1907) presents a paper based upon over 100 cases of syphilitic cerebral disease in children from the literature. There are, he says, three pathological conditions in the brain, which, singly or in combination, may be responsible for the symptoms of cerebral syphilis. They are, in the order of apparent frequency of occurrence: Meningitis (usually leptomeningitis); arteritis (usually endarteritis); syphilomata (usually of meningeal origin). The diagnosis of cerebral syphilis cannot be made from the individual symptoms, as these may be produced by different causes, but by studying them collectively and the character of their onset and progress. When produced by syphilitic lesions of the central nervous structure, these phenomena present the following characteristics: (1) They are multiform, having often no apparent relation to one another, associated together in an apparently random manner, often rendering their explanation, on the basis of any single lesion, impossible. (2) The onset of the phenomena is, as a rule, subacute, with the occasional occurrence of individual symptoms of very acute character and severe degree. (3) These latter phenomena are characterized by their tendency to disappear in the most unexpected manner, after a very brief duration, and by their equally striking and practically certain recurrence in the same or in some other locality; with the eventual persistence, after several such recurrences, of peripheral evidence of a destructive and permanent central lesion. (4) The striking rapidity with which some of the symptoms yield to specific treatment, and the equally remarkable manner in which other phenomena persist or pursue their course without the slightest regard to energetic therapeutic measures, or even make their appearance while such treatment is in force. The phenomena are manifold, varying from time to time in character and degree; motor phenomena may dominate: epileptiform convulsions, general or unilateral; monospasms; tremors; involuntary irregular movements without loss of consciousness; motor aphasia; paralytic conditions of any degree of severity or extent. Ocular palsies belong to the instances in which involvement of the cranial nerves is a prominent feature. Sensory phenomena, neuralgic pain, numbness, anesthesia, and various parasthesic phenomena may prevail for a considerable time, especially in the early stages of the dis-

ease, while the background of other symptoms is still indefinite and vague. In other cases the psychical features, changes in character, irritability, apathy, depression, impairment of memory, diminution of mental capacity, dementia, and very rarely mania, may either usher in or close the scene, or remain throughout the essentially predominant manifestation of the central process. The initial symptoms are often characterized by insidious onset, transient character, and erratic course. Headache is frequently an early symptom, but is often not well defined, and is often more diffused and less severe than in adults. Insomnia is less common in children. Changes in disposition and in intellect are perhaps the most common initial manifestations. Other initial phenomena which may coexist or replace these are circulatory disorders: vertigo, brief disturbances of speech and vision, sudden attacks of syncope, mental confusion, and sudden lapses of memory. Sooner or later more positive symptoms appear: inequality and fixation of the pupils, facial palsy, hemiplegic attacks or epileptiform convulsions. Concerning the type of lesion, the writer says that those instances in which occur intense headache, cranial nerve palsies, excessive reaction to sensory impressions, especially hearing and sight, dulness or torpor, insomnia or an unnatural tendency to sleep, and convulsive attacks and psychical disorders, especially when accompanied by a choroiditis, are indicative of a meningitis. When the cranial nerve palsies are an early or a predominant feature, a meningitis commencing or concentrated at the base is probable. Convulsive attacks and psychical irritability or depression, dulness or insomnia suggest the cortex as the seat of the greater meningeal involvement. Those cases in which vertiginous attacks, sudden losses of consciousness or brief mental confusion, transient disturbances of speech and paralytic affections of short duration or eccentric type prevail, are instances in which arterial change is probably the predominant morbid process. A tumor usually gives rise to focal symptoms depending on the situation of the growth. The gummatous growth of specific cerebral disease, however, is more commonly a diffuse gummatous infiltration of the meninges, its symptoms being consequently those of meningitis, and especially meningitis at the base, with resultant cranial nerve disturbance. The prognosis depends to a considerable extent on the pathological type. Purely gummatous lesions yield readily to specific treatment. Meningeal processes, if not of too long duration, and taken at a time previous to the occurrence of secondary atrophy and sclerosis in the gray matter, also possess a favorable prognosis. If destructive involvement of the hemispheres has already occurred, specific treatment may check the advance of the meningoencephalitic process, but the destroyed areas remain, with atrophy, sclerosis, and softening and adhesions between the meninges and brain. Of all the forms of syphilitic cerebral disease the arterial lesions present the most unfavorable prognosis. Finally, the prognosis depends greatly on the time

when the cerebral disease commences. If it begins at a period of childhood when reasonably reliable subjective complaint is possible, or when the mental evolution has reached a degree at which early changes in disposition and insidious weakening of the intellect are likely to be conspicuous, earlier recognition, and therefore more effective treatment, will result.

Alcoholic Cirrhosis of the Liver in Children.—After discussing the various types of cirrhosis of the liver which may occur in children and the relative frequency in adults and children, Ernest Jones (*Brit. Jour. Child. Dis.*, Jan., Feb., 1907) concludes that alcohol is the most common clinical cause of cirrhosis known at present. It is seen often enough to warrant consideration of its possibility when ordering alcohol or permitting its employment in children.

Albumin and Casts in the Urine of Children.—In discussing the various causes of albuminuria F. E. Sondern (*Arch. of Ped.*, Feb., 1907) speaks particularly of the long-continued functional albuminuria with or without casts, which may result from intestinal autointoxication and closely simulate the urinary findings of true nephritis. This type of albuminuria, due to intestinal toxemia, is especially important to recognize in children because of the facility with which intestinal disturbances occur in the young. The laboratory aid to its diagnosis is the examination for relative excess of ethereal sulphates in the urine. As indoxyl and skatoxyl sulphates are the varieties most frequently present in excess, a test for this excess is important; but a direct quantitative estimate of ethereal sulphates and of mineral sulphates is naturally the more accurate procedure and consequently better for clinical deductions. Of course, a depression in the ratio of mineral and ethereal sulphates or an excess of indoxyl sulphate, being accompanying factors only and not directly concerned as the actual causative element of the symptoms or of the albuminuria, may be brought about by other causes. Their corroborative value in the diagnosis of intestinal toxemia cannot, however, be denied.

Enuresis in Children.—Arturo Cavalieri (*Riv. di Clin. Ped.*, March, 1907) finds that the reason for the unsuccessful methods used for treatment of enuresis in children is the lack of accurate knowledge of the causes of the condition. Unless we know the cause in a given case we cannot properly direct our therapeutic measures. He defines enuresis as a condition of involuntary evacuation of the bladder in children over two years of age, who have normal brains and no anatomical lesions or lack of development. This definition will exclude all children who have hereditary or congenital brain troubles or deformities; all spinal cord troubles, epilepsy, and diabetes, as well as those affected by fear. He considers separately the direct and remote causes of the condition. The condition is essentially a neurosis, and we constantly find hereditary neurotic conditions as the remote cause. Accord-

ing to some, the anatomical substratum of the condition is a hypoplasia of the central nervous system, and it is a true symptom of infantilism. According to others it is a manifestation of hysteria. The immediate cause is a hyperexcitability of the *detrusor vesicae* with a relaxation of the sphincter of the urethra. According to another theory, it is due to a lack of development of the prostate resulting from lack of closure of the bladder orifice. Four forms are recognized by the author, in all of which the usual dietetic and hygienic measures are useful. In hyperexcitability of the detrusor, extract of belladonna administered at night in increasing doses is the best remedy. Valerian and hot baths are also useful. When there is deficiency of the sphincter of the urethra strychnine hypodermically is useful, also cutaneous faradization over the bladder and sacrum. For reflex enuresis the removal of the cause is the proper treatment. With deficient muscular apparatus of the prostate and non-closure of the bladder there are usually other deformities. Massage and dilatation of the urethra are useful. The most modern measure is the injection of physiological salt solution into the spinal canal, the needle entering in the *hiatus sacralis*. Most brilliant results have been obtained by Cathelin. The effect of the injections is supposed to be a stimulation of the roots of the nerves.

Infantile Tubercular Testicles.—G. Poissonnier (*Gaz. des Hôp.*, Mar. 16, 1907) says that tuberculosis when localized in the genital organs of the male infant is primary in the testicle, secondary in the epididymis, which is the contrary of what occurs in the adult, in whom the epididymis is affected sooner than the testicle. In the infant there is an orchitis. It may occur in a child of any age, even in the fetus at term, or a few days after the birth of the child, and is more frequent in the young infant than in the child, until he has arrived at puberty. It is generally single. Traumatism and masturbation may be causes, but heredity is the most powerful factor. The affection may come by way of the circulation, by way of the lymphatics, or from the epididymis. The scrotum presents the same lesions as in the adult. Generally the epididymis is also affected. The efferent canal may be involved, and even the prostate. It may be propagated to distant regions by the blood or lymphatics. The inguinal glands are often involved, as well as the iliac and lumbar. There are several forms of the disease, acute and chronic. The testicles become tender, swollen, adhere at one point to the scrotum, and an abscess and a fistula form. In more chronic cases there is no abscess formation and little pain or tenderness. When caseation occurs an abscess soon forms in the testicle. It may be limited by fibrous formation and not open externally. The only complication to be expected is the generalization of the tubercular process. The prognosis when this does not take place is good. Cicatrization occurs, with a greater or less amount of useful testicular tissue.

The affections from which it has to be differentiated are syphilis, cancer, and gonorrheal orchitis. The treatment should be conservative. Knowing that a certain amount of useful testicular tissue usually remains after healing, it is best not to remove the testicle. Suspension, puncture with injection of iodine or iodoform, curettage, and cauterization are the best local measures. The most important treatment is general and hygienic, and does not differ from that of tuberculosis localized elsewhere.

Communicating Hydrocele of Tuberculous Origin.—M. G. Sicard (*Rev. Mens. des Mal. de l'Enf.*, March, 1907) says that whatever the pathogenic theory adopted, communicating hydrocele of tuberculous origin is only a variety of tuberculosis of the vagino-peritoneal canal, and its study is inseparable from that of tuberculous hernia. The symptoms are dull swelling of the scrotum, fluctuating, translucent, reducible without gurgling by simple decubitus or pressure between the fingers, combined with a bad general condition of the patient. Often there are ascites and meteorism of the abdomen. A small, indolent tumor is found at the bottom of the vagino-peritoneal canal. There may be isolated tuberculosis, without inflammatory reaction, or tubercular peritonitis, acute miliary or chronic. The pathological anatomy and the bacteriology show the tubercular nature of the process. The vagino-peritoneal canal, a narrow and deep recess of the peritoneum, forms a good soil for the tubercle bacillus, a place of little resistance. Treatment is operation, easy of execution and not dangerous. Laparotomy will permit of the evacuation of the ascites and will have a good effect on the peritonitis.

Prophylaxis of Infantile Enteritis.—Paul Londe (*La Presse Méd.*, March 23, 1907) says that more intestinal troubles arise from overfeeding than from any other cause. The infant should not be fed in quantities in proportion to its weight, but to its stage of development and digestion. It is much better to underfeed than to overfeed. Mothers and even physicians give the infant more food materials than it can take care of. A large proportion of infants grow and remain in good physical condition on a ration much less in quantity than that usually prescribed by physicians. The efforts of the physician should be directed to lessen the accumulation of weight in the infant rather than to increase and hurry it. The mother or the nurse should never be allowed to increase the amount of food to be given. That should only be done under the physician's orders. As soon as the stools are fetid, of bad color, or loose, and the infant cries with pain, it is time to reduce the ration. It should not be increased until the normal state of digestion has returned. Milk should be the only food until the child is two years old. Then porridges, soups, and eggs may be begun cautiously. If there has been a severe enteritis, after the water diet, milk may be given in doses of a coffee spoonful in three of water, and this may be doubled each day. Vege-

table soups will not be useful because the pancreatic ferments are not as yet formed. Human milk may be the only remedy that will be of value in some cases, and that must be obtained at any cost, by means of a wet nurse if the mother has none. Superalimentation is the principal cause not only of enteritis, but also of most of the infantile troubles of a nonspecific nature, such as bronchitis and broncho-pneumonia.

Infantilism and Psychical Degeneration.—Brissaud (*Rev. Fran. de Méd. et Chir.*, March 25, 1907) says infantilism presents itself under various aspects. It is a condition characterized by the persistence of physical attributes of childhood long after that period of life has passed. There is an intimate relation between some cases of infantilism and myxedema. Myxedematous infantilism forms a well-defined type of the disease, of remarkable homogeneity. It represents the purest type of infantilism, producing not little old men nor small adults, but large infants, who grow old as children. There is a definite and well-known pathology, the cause being alterations of the thyroid gland. The author records a history of such a case in which psychical degeneracy was combined with infantilism. In order to have a full development of the human system it is necessary not only to have nutritive material in abundance, but to have nutritive forces to direct their use. Heredity carries on these processes. A morbid, nervous heredity is responsible for the wrong direction of the nutritive forces; directly, by its immediate action on the ontogenic functions; indirectly, by its action upon the thyroid gland, and perhaps on the hypophysis and other vascular glands. Psychical degeneration and infantilism both have the same cause, mental and nervous heredity, and may coexist in an individual and produce a mixed type.

Congenital Symmetrical Sinuses of the Lower Lip.—H. S. Clogg (*Brit. Jour. Child. Dis.*, Feb., 1907) records a case of this unusual condition observed in a girl twelve months old. The child was born with a very severe degree of bilateral hare-lip and cleft palate; the premaxilla stood out prominently. The latter was broken and bent backwards, and the upper lip repaired over it. On the upper surface of the lower lip on either side of the middle line was a papilla; the two papillæ were symmetrical, and surrounding them in the form of a semicircle on the aspect towards the mouth was a groove, and leading from this furrow a sinus, which passed downwards into the lip for about a quarter of an inch. The two sinuses ended blindly, converged slightly, and were situated immediately underneath the mucous membrane of the lip. Issuing from the sinuses was a mucoid secretion. The writer has found references to thirty-eight cases of this deformity. In a number of instances it has been observed in one or other parent and in two to four of the children. In one family it occurred in grandmother, mother, and daughter. It

appears to be almost invariably bilateral. Deformities, apart from those of the upper lip and palate, do not seem to be often present. The lower lip is generally well formed in other respects. It has been mentioned as being abnormally thickened; the mucous membrane has been recorded as hypertrophied; a median depression of the lip has also been noted. The deformity is symmetrical and is seen just to one side of the mid-line. The simplest appearance is that where a groove, shallow recess, slit-like orifice, or simply an opening is seen on either side of the mid-line on the upper border of the lip. In other cases in addition there are present papillary elevations as in the case here recorded, these processes sometimes being capable of considerable movement. Other variations occur. The sinus which leads from the external orifice into the lip is variable in length. It may be a mere depression or reach far into the lip. Its direction is downwards and somewhat inwards, the two converging slightly. The sinuses are lined with mucous membrane, continuous with that of the lip, and opening into them are numerous mucous glands. Muscle bundles are present in the papilla and around the sinus. The writer discusses the various theories of the origin of the deformity, none of which he considers satisfactory.

Hematuria in Infants and Young Children.—J. Porter Parkinson (*Brit. Jour. Child. Dis.*, Feb., 1907) speaks of hematuria in a child under one year of age as usually being due to infantile scurvy, renal sarcoma, or uric acid crystals in the tubercles and pelvis of the kidney. Hematuria is one of the most frequent of the visceral bleedings of purpura hemorrhagica. Hemorrhagic types are sometimes seen in measles, diphtheria, influenza, and other acute infectious diseases. Hematuria is a common symptom of acute nephritis, especially of the form following scarlet fever and occasionally influenza. Some drugs may produce hematuria either from being impure or given in too large doses. Chlorate of potassium sometimes causes it. The appearance of blood in the urine of patients taking sodium salicylate is generally attributed to impurity of the drug. Hematuria has followed the eating of rhubarb or strawberries. Turpentine and cantharides may be causes of hematuria, but these drugs are rarely administered to children. An obscure variety of hematuria has been described under the name of idiopathic, congenital hereditary or family hematuria, in which twelve members of a family had hematuria persisting for many years, occasionally ceasing but recurring. Infarcts in the kidney during malignant endocarditis may be a cause of hematuria. It may also be caused by renal calculi in the kidney or bladder, or by papillomata and other vascular growths in the lower urinary passages. Some obscure forms of hematuria have been ascribed to rheumatism. The first symptom of renal tuberculosis may be the presence of blood in the urine. The treatment of hematuria is usually that

of its cause. That of scurvy yields to antiscorbutic diet; that due to uric acid concretions usually disappears spontaneously. Cases of drug hematuria apparently clear up from rest in bed. Calcium chloride seems inefficient. Some cases rapidly improved after administration of ergot or of adrenalin. Cupping is of value in the hematuria following scarlet fever or influenza. In all cases of hematuria milk diet and rest in bed are imperative.

Diagnosis of Barlow's Disease.—W. v. Starck (*Münch. Med. Woch.*, March 5, 1907) says that the picture in infantile scurvy is rarely typical, and that diagnosis must often be made from the appearance of one or two symptoms. When a child between the ages of five and fifteen months loses appetite, is sleepless, and gives evidence of pain in dressing and undressing and on movement, we should think of scurvy rather than rickets. Scurvy is more apt to occur in families that are better off and in which the child has been fed on prepared foods than among the poor who nurse their children. The typical symptoms are anemia, hemorrhagic swelling of the gums, pain on movement, swelling of one or more extremities, hematuria, and hemorrhagic swelling of the eyelids and exophthalmos. Anemia may be a symptom of other conditions. Swelling of the gums is absent in children whose teeth have not yet appeared. When present the gums take on a bluish-red swelling and bleed easily. Hematuria may not be present. When calomel is given to a syphilitic child it is well borne, but in scurvy a single dose may produce stomatitis. The amount of alteration of the bones depends on the pathological changes. There may or may not be hemorrhage between the epiphysis and diaphysis. It affects the long bones of the lower extremities first, then those of the upper, later the ribs. It is generally symmetrical on the two sides. The X-ray shows an increase of shadow between the ends of the shafts and the epiphysis, followed by atrophy. Swelling of the lids and exophthalmos result from hemorrhage into the orbit. The immediate curative effect of vegetables and fruits is of digestive value.

Acute Infection of Urinary Tract in Children.—John Zahorsky (*St. Louis Cour. Med.*, Feb., 1907) reports five cases in young girls and female infants, clinically resembling typhoid or malaria, but shown by examination of the urine to be pyelitis or cystitis. These cases are usually diagnosticated as malaria, sepsis, influenza, or typhoid. Girls are much more frequently attacked than boys, suggesting that the infection occurs through the urethra. The writer thinks that in every case of acute or chronic fever, especially in girls, the cause of which is not obvious, the urine should be examined. In these cases there is very little disturbance of the bladder. Often there is no increased frequency of urination. One cannot depend upon local or general symptoms to exclude the disease. It is often impossible to state whether the renal pelvis or the bladder alone is implicated.

The Serum Disease.—J. D. Rolleston (*The Antiseptic*, March, 1907) bases his paper on observations made on 1,100 diphtheria patients, 1,057 of whom were injected subcutaneously with antitoxin. Within a few hours of injection, cases of serum disease show a moist skin or profuse perspiration, drowsiness, local or generalized erythema, and diminution of urine. There is then a latent period of from one to eight days, with no new phenomena. The second stage is characterized by the development of urticaria, usually first at the site of injection, to which it may be limited or become generalized. It is often associated with edema, especially when a second injection of antitoxin is given for a relapse or second attack of diphtheria, when the primary injection has been given some weeks or months before. Pruritus may be intense. Albuminuria may occur simultaneously with the urticaria or preexistent albuminuria may be increased. The total excretion of urine may be diminished. The third stage does not always arrive. Usually separated by one or more days from the second, it may sometimes be continuous with it. Its most striking feature is the development of a rash, at first usually an amorphous erythema, but sometimes circinate from the first, and almost always becoming circinate subsequently. The temperature is usually raised. Malaise and anorexia are present, especially in older patients, who are more likely than younger ones to suffer at this time from pains in the joints and muscles. The submaxillary and cervical glands, and, to a less extent, the axillary and inguinal, become swollen and painful, usually with no phenomena within the throat. The prognosis of the serum disease is absolutely good. The more marked the serum phenomena the better the prognosis of the diphtheria as regards recovery and escape from serious paralyses. Prophylaxis of serum disease consists in the administration of calcium chloride in gr.-v doses thrice daily for the first few days in mild cases of diphtheria. For the irritation produced by urticaria nothing excels the application of a menthol ointment (menthol 5j, white vaseline 3j). For joint pains immobilization of the joints by splints or the application of belladonna fomentations is suitable, or aspirin internally.

Typhoid Infection Conveyed by a Convalescent Infant.—T. S. Southworth (*Arch. of Ped.*, March, 1907) contributes to the literature of this important subject the report of an infant who had fever, vomiting and intestinal symptoms, and pneumonia. Several Widal tests gave negative results. Another child in the family had had typhoid just before his illness and two others of the family were attacked soon after his recovery. He was sent with them to a hospital for a few days, but had no fever. He was then transferred to a private family in a tenement. He was pale and sickly and his stools had a very bad odor, but the only acute illness was a fever lasting a few days and relieved by treatment of an inflamed prepuce. Twenty days after his arrival in this family, two children, and subsequently a third, were attacked

with typical typhoid. Examination of the original patient's blood now gave a positive Widal reaction. The writer calls attention to the danger of infection from the stools after recovery, especially in the case of infants whose diapers are washed in the single sink in the tenement kitchen, and are changed by busy women, who often neglect washing their hands subsequently unless they are obviously soiled.

Diagnosis of Scarlet Fever.—A. R. Braunlich (*Arch. of Ped.*, March, 1907) says that, in arriving at a diagnosis, the course of events in a typical case must be kept in mind, as there is a regularity in the order of appearance of the symptoms, whether the case is severe or mild. With the usual sudden onset, with disturbances of the stomach, nausea or vomiting, and occasionally convulsions, the diagnosis is based on the following objective symptoms: Condition of the tongue, the temperature, the pulse-rate, the rash, and the condition of the throat. The tongue, in the majority of cases, during the entire course of this disease, shows nothing more than the ordinary fever coating. The real denuded strawberry tongue, *i.e.* a bright-red tongue with large papillæ and either no coating or only a slight coating on the posterior half, appears on the fourth or fifth day; and, occurring *then*, is of the greatest significance. Such a tongue seen on the first or second day of the disease should carry no weight as a diagnostic feature. Fever is, as a rule, present. There are exceptional cases where the temperature never goes above 99° F., the cases being typical in other respects. In young children the typical temperature curve is rarely seen. On the contrary, the temperature may be most irregular. The pulse is invariably rapid, being elevated more than the usual eight or nine beats for each degree of fever. The rash may appear within a few hours, and always appears within forty-eight hours after the onset of the disease, and regularly travels downward. It first appears on the neck and chest, at times not reaching the lower limbs until the second or third day. If the case is seen as late as the third or fourth day, the rash on the trunk may have entirely faded. The typical punctate erythema is not always easily distinguishable, and the varying surface congestion frequently alters the appearance. The regular erythema may be accompanied by blotches resembling measles, and usually on the extremities. The erythema may be very faint on some parts of the body and brighter on others. It may be well developed only in the flexures of the joints. The rash and inflammation of the throat are necessary for a diagnosis. At present there are in this city a number of cases in which the diagnosis cannot now be made between German measles and scarlet fever. The patients with German measles apparently recover in about four days. They do not desquamate, or do so less freely than in typical scarlet fever. The time of desquamation is important. Peeling in scarlet fever does not begin on the hands before the latter half of the second week.

Primary Intestinal Tuberculosis in Nursing Infants.—A patient of S. M. Snow (*Arch. of Ped.*, March, 1907), aged one year, died after one week's illness, which was probably tuberculous. A sister, born one month before his illness, thrived for two months. She died after an illness of two months, the autopsy showing miliary tuberculosis of lungs, spleen, and skin, caseous, bronchial and mesenteric lymph nodes, and tuberculous ulcer of the ileum. Both children were infected at the end of March, the older child dying quickly, the younger one lingering for two months. There was no tuberculous heredity. The parents, relatives, house servants were well; the nourishment, breast milk, was proven by inoculation experiments to be free of tubercle bacilli. A trained nurse was in attendance at the second confinement. At the time she was in poor health and coughed frequently. After a month's stay she went home, and two months later tubercle bacilli were found in her sputum and tuberculous lesions discovered in her lungs. There can scarcely be a doubt that the nurse infected both babies by prolonged personal contact, either by kissing, sneezing, coughing, or breathing in their faces. The writer quotes a number of cases from the literature.

Occurrence of Goiter in Parent and Child.—In a patient of Ernest Jones (*Brit. Jour. Child Dis.*, March, 1907), at the age of five and a half years, the mother noticed a fulness in the neck that had increased fairly rapidly at first and then more slowly, but which was still growing six months later. No other symptom had been noticed. The diagnosis of parenchymatous goiter was made and thyroid extract was administered. Within two weeks from this time the size of the tumor had obviously diminished. After this the shrinking progressed more slowly until the gland had attained its normal size in about ten weeks. The mother, aged 37, had had for some eight years an enlargement of the thyroid affecting chiefly one lobe. After six weeks of administration of thyroid extract, the swelling was perceptibly smaller and an adenoma was clearly defined. The writer says that it is not certain that there is any disease of the thyroid that is hereditary in the biological sense, that is, is due to a transmissible innate variation; so that any part that heredity may possibly play must be an indirect one connected with perhaps the question of susceptibility to certain poisons.

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CHORIOEPITHELIOMA.*

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ONE of the most actively malignant of all tumors of the uterus existed without due recognition until Sänger, on July 16, 1889, reported to the Leipzig Obstetrical Society two cases of "Unusual Abortion." He proposed the name, "Deciduoma Metastica Malignum." A 23-year-old woman aborted in the eighth week. She died seven months later, having developed four large, spongy, reddish tumors in the uterine wall, with metastases in the lungs and elsewhere. Sänger reported this case to the German Gynecological Society in 1892, and wrote a monograph in 1893. The appearance of the growth in Sänger's cases led him to think the disease a variety of sarcoma, and he gave it the name "sarcoma deciduocellulare," which has been used ever since by those who may be called of that school. Sänger made a study of Chiari's¹ case reported prior to his, but not understood by him as a type of tumor which would attract such universal attention. Although many observers agree with Sänger, as will be seen later, still more have been persuaded that the disease is not a sarcoma, and due to

*Read before the Washington Obstetrical and Gynecological Society, May 3, 1907.

some form of maternal predisposing cause, but rather that it is due to the fetal, or chorionic epithelial cell invasion of the maternal structures. Veit has largely adopted Säger's view, and Marchand has led the attack against the theory that the disease is probably of sarcomatous origin. Chiari in 1877 had described a similar case as carcinoma, but was compelled to announce a change of view. Pfeiffer, a pupil of Chiari's in 1890, added the report of a case in which he adhered to Säger's view. Maier's case in *Virchow's Archiv*, 1876, Vol. LXVII., p. 55, was reported prior to that of Chiari, but its authenticity is questioned.

Frequency of the Disease.—Since Säger's announcement more than 200 cases have been reported, and it is generally thought that many cases are overlooked even at the present time, and that with greater care a still larger proportion will be discovered. As will be seen later, the lives of these patients may be saved by prompt hysterectomy, and therefore the early recognition of the disease is a matter of supreme importance. McCann says that six cases have been seen in the Samaritan Hospital, London, in three years.

Age.—As the disease is now thought necessarily one of the child-bearing age, we find the youngest reported case in a girl of 17.² Champneys³ had one case in a girl of 18. The oldest was reported by Holleman,⁴ age 52.

Clinical History.—The symptoms of malignant chorioepithelioma are similar to those of other forms of malignant disease, but with certain differences which may serve to aid in the diagnosis. The chief characteristic of the disease under discussion⁵ is that it almost invariably follows closely upon an abortion or else the discharge of a hydatidiform mole. We should, therefore, be unusually watchful for hemorrhage after either of these accidents. It has been shown that at least 50 per cent. of the cases of chorioepithelioma have occurred after the discharge of a mole, and if the patient has been curetted at the time, a second curetting should be promptly done in case of renewed hemorrhage, and the debris subjected to microscopic examination. The hemorrhage will not be characteristic of mere menorrhagia, for the flow depends upon the invasion of bloodvessels by cells comparable to that of any malignant process, with perhaps the most rapid spreading of any form of such growths. As the microscope gives such positive information, we feel it necessary to insist upon careful examination of the uterine contents in all such cases, in order to prevent a fatal result. Patients with this disease will not present the usual

signs of emaciation or a cachexia if seen early, or before the uterus has been perforated, and metastases have imperiled their lives; but they are nevertheless known to have the sallow skin and all of the symptoms of a cachexia at a relatively earlier period than is observed in ordinary cancer. Pain is experienced very early in the disease, and is not unlike that usually experienced by patients with other forms of malignant disease. When metastasis occurs it is necessary to give the patient the benefit of operative treatment, for several recoveries are recorded even after the vagina, lungs, or other organs have been invaded. In fact, the first definite symptom which has been observed in certain cases has been a metastasis. It would therefore be folly to abandon a patient presenting the signs of metastasis in remote organs, associated with symptoms of some form of malignant growth in the uterus.

Course.—As already mentioned, the course of this disease is strikingly rapid. One of the apparently satisfactory reasons for thinking it a form of sarcoma, existing in the mother before conception occurred, is the markedly prompt advent of hemorrhage and other symptoms of malignancy after an abortion. Usually a fatal result occurs in a few months. Sängers case died in seven months. Other authors report cases which proved fatal within the year after the first symptom of the disease. Ladinski⁶ reports the following case:

Young woman, age 19; married 18 months; gave birth to her first child in 1900. She nursed this child for eight months, and again menstruated in April and May, 1901. She missed her period in June, and was having pain and hemorrhage by the middle of July. The hemorrhage rapidly increased and was followed by a cough and bloody expectoration. Then followed more uterine hemorrhages which required tampons and other treatment. The uterus at this time was found very much enlarged; about the size of a six months' pregnancy. The external os was dilated and large masses of hydatid cysts were removed, and the bleeding then ceased. On August 7 the patient was again curetted, but little débris was removed. Ladinski then saw the patient (October 1). She was anemic and appeared to be very ill. Her heart was normal, but mucous râles were present in the left lung, and she had cough and bloody expectoration. The urine was negative. The finger nearly perforated the uterine wall when introduced through the internal os to the fundus. The patient was cured by hysterectomy.

Williams⁷ case was in a colored woman, who presented the symptoms of metastasis in the vagina and on the labia in one week after a normal delivery. In two weeks this swelling had attained the size of a hen's egg, and resembled a hematoma in appearance. Other symptoms of metastasis appeared in rapid succession, and the patient died six months after delivery. The case was the first one studied, or at least reported, in America, and it was not understood until the post-mortem findings disclosed the real nature of the disease. "The lungs were studded with metastases of varying size, which resembled placental tissue in appearance. Smaller growths were present in the kidneys, spleen, and ovary." It is interesting to observe that Williams found only a small portion of the uterine wall involved, as he tells us that a "module about one centimeter in diameter was found in the uterus."

Descriptive Anatomy.—The chorion has been studied in various stages of development from the earliest authenticated ovum,⁸ which was found in the uterus of a woman who had committed suicide after missing her period. (It measured $1.6 \times 0.8 \times 0.9$ millimeter, and presented the typical and well marked anatomical structures, chorion and amnion, at this early date.) Such studies have afforded much valuable information regarding the anatomical elements, which explain the relation of the normal villi to the gross pathological changes which are called "deciduoma malignum," or "chorioepithelioma." By examination of a villus in cross section taken from an ovum of a few weeks, we may see the same outline of development as in one taken at the end of gestation. Certain layers of cells indicate at this early period what later on will play a vital part in the normal growth of the membranes, or possibly a destructive part, if they proliferate or run riot through the maternal structures. As the period of gestation continues, the villi are seen on cross section to acquire a better construction, which fits them for their physiological purpose. At about the end of the first month they show bloodvessels. These vessels are provided with coats, just as other vessels in permanent structures or organs are provided. The villi develop from a single stem, which throws out branches here and there until the well-known tree-like form is produced. Each little tuft is complete in itself, however, and can communicate only with decidual structures, and not with other villi. Williams mentions Dalrymple as preceding Langhans in an accurate histological description of the cell formation of the villi, but the name of the latter has been long

associated with these cells, and they are known by his name, although some authors prefer the appropriate embryological term which shows their origin in the trophoblast. One may look through Peters' work on the ovum without finding Langhans's layer mentioned. It is always the "trophoblast."

Langhans's Cells.—We give what Teacher quotes from his description of "Langhans's layer" and the syncytium. "An inner single layer of cuboidal cells, with clear protoplasm, round, or oval vesicular nuclei, moderately rich in chromatin, and showing a well-marked intranuclear network and nucleolus. Multiplication is by indirect division, and karyokinetic figures can usually be found without much trouble. The protoplasm contains glycogen. The cells are 'individual' cells. They rest on a connective tissue core, the line of junction often being a well-marked basement membrane." Langhans's layer of cells, and the syncytium, together, form the outer layer of the villi, and it is this portion which concerns us in the study of chorioepithelioma. The cells are susceptible to treatment by staining for differentiation, and are then shown on section in a single layer, which appears as a row, or line, immediately under the syncytium, with which it is in close contact.

The Syncytium (the plasmodium of early writers on obstetrics).—Enclosing Langhans's layer, and separating it from the maternal blood in the intervillous spaces, is the syncytium, a layer of protoplasm in which no definite cell boundaries are recognizable. The protoplasm has an opaque appearance, and takes the usual contrast stain somewhat deeply. In specimens fixed with osmic acid it is found richly loaded with finely divided fat. The nuclei are generally smaller than those of Langhans's layer; oval or elongated, solid, and staining more deeply. The syncytium frequently spreads out into "buds," which may be detached from the main layer, and lie apart as multinucleated giant cells free in maternal blood, or it may be merely a thin layer resembling endothelium.⁹ The free margin may show apparent cilia, but their lack of motility proves the contrary.

The description already given of Langhans's layer cells must always supplement, or be supplemented by a description of the syncytium, for they are not only associated from the earliest period of fetal growth, but they continue this relation with more or less persistence when malignant changes occur in the decidua, and still further when metastases have developed the disease in distant organs. The syncytium, or outer layer, shows less definition of

outline than the "Langhans's layer," possibly because the stain is not freely taken up by it. As usually seen in sections, it may be compared to protoplasm without many cells. In other sections the characteristic giant cells with many nuclei are seen in large numbers.

Office of the Trophoblast.—In the formation of the placenta the structures named above are not seen just as described, but have now taken upon themselves their function of maternal invasion of decidua and of uterine muscle. This physiological action of the "trophoblast" is normal, and is intended to set up a communication between the villi and the maternal vessels, which may proceed beyond the safe and normal limits and become a malignant process. It will be seen later on that some authorities deny that the syncytium and Langhans's layer are of fetal origin, but the preponderance of opinion is about as we have stated above.

Pathogenesis.—Veit (Handbuch) alludes to the many difficulties in the way of accurate representations of the part taken by the fetal and maternal structures. For instance, the outer layers of the villi, or the whole mesoderm, and, as he insists, the decidual elements also, are involved and must be differentiated from each other. Veit believes in what he calls the unity of the disease, while Fränkel and others stand for subdivisions into carcinomas, endotheliomas, decidual-cell sarcomas, or simple uterosarcomas, all of which are from deciduoma, and finally one species which arises from the villi. Eden at one time thought the disease due to sarcoma, but he changed his view, and now Veit is the principal advocate of the sarcoma theory, largely, we think, because he finds no satisfactory way of explaining the presence of spindle cells, which are, as he says, either enlarged endothelia or else sarcomatous. Veit thinks the syncytium and Langhans's layer cells "lie in the veins" and blood spaces. In other places, as in the connective tissue, he thinks the large cells containing much chromatin indicate formations with "syncytial character," rather unlike the villi, as mesoderm, chorial syncytium, and Langhans's cells lie only in bloodvessels. Fränkel thinks the tumor masses grow exclusively in the vessels, and by means of "chorial wandering cells," and says the masses grow from the blood spaces into the connective tissue. Veit, however, regards these "wandering cells" not as of fetal origin, but as sarcoma cells. He insists that syncytium, and not fetal elements, are characteristic of the disease, and declares that

under the influence of pregnancy various other cells take on a syncytial character.

Nearly all authors agree with Veit in the arrangement of the cells and in other features of the growth of the tumor or extension of the malignant process. They are united as to the method of attack of these cells, and believe that the rapid infiltration of the cells of the trophoblast (the wandering cells) into the maternal blood spaces constitutes the main feature of the morbid process.

Pathological Anatomy.—The most important characteristic of decidua malignum is its connection with pregnancy, and it is therefore of interest and importance that we have some understanding of the anatomical elements which are concerned in the structures about to be mentioned. It is necessary to know the function of the tissue elements and their relation to each other. It is most difficult to select from various authorities what may be called a correct description of the cell layers of the chorion and the decidua, for many points are as yet undetermined. If we take the view of Veit, the syncytium is characteristic of maternal structure, and is found in decidua. It is described by him as a mass of protoplasm covering Langhans's layer of cells, which quite, or partly, covers the tufts. It contains many nuclei which are rich in chromatin, but without cell walls. It does not always appear in the same form and may not be easily differentiated from giant cells. Veit believes the syncytium not a "specific tissue, but a period in the life of the single-cell species." He further claims that syncytium of different kinds is found in tumors showing different origin.

The cells of Langhans's layer may be present with or without other mesodermal chorion elements. Veit calls attention to Freund's case, where the tumor consisted almost entirely of syncytium, showing that even "Langhans's layer" cells are sometimes either absent, or present in comparatively small numbers. In some instances the stroma or connective tissue layer contains spindle-shaped cells, which have given rise to the belief by some pathologists that this shows or proves the sarcomatous nature of the disease. They resemble endothelial cells, and besides it is impossible to identify them as pertaining to the mesodermal part of the chorion, or with the syncytium, and to bring them into their proper relation.¹⁰

The description already given shows that a vast majority of cases of chorioepithelioma appear much like the other forms of

malignant disease, but with the added element of a preceding pregnancy, and this followed by rapid extension and uniformly prompt metastasis. There are a few cases where the disease closely resembled ectopic gestation, and we find that Ernest Boyen Young¹¹ reports such a case which gave all the symptoms of pain and hemorrhage characteristic of ectopic gestation. Three weeks after the first attack a recurrence of pain, with fainting, necessitated abdominal section. The pelvis was found full of blood with old and new clots. At first the lesion appeared to be in the tube, but later a perforation was found at the cornu, which was excised. A microscopical examination of the specimen clearly showed the nature of the disease, and the uterus was removed. The patient rapidly developed a cachexia, and died a few weeks later. This case shows how easily deciduoma malignum may be overlooked even by one with all of the resources of hospital training and outfit such as the Boston City Hospital affords. Another type of interest is that of Maier's case (mentioned by Beach), where the tumor mass was expelled from the uterus along with the fetal membranes. Gottschalk's case, mentioned by Veit, showed the possibility of a tumor in the uterus before conception occurs, although the absence of symptoms gave no proof of such an assertion. Haerman's case was like Ladinski's: "On opening the abdomen the appearances indicated extrauterine pregnancy (called interstitial), which was shown by the microscope to be chorioepithelioma malignum. Vaginal hysterectomy was followed by a fatal result in three and a half months, 'marasmus.'"¹²

Histological Description of the Tumor.—The tumor consists of great masses of well-defined cells of various shapes, packed closely together and adjoining other masses of syncytium or protoplasm with many nuclei, but with no definite cell boundaries. These masses are a result of an extensive proliferation of the cell layers already fully described. But now they are infiltrating the maternal tissues as in any malignant neoplasm. The apparent intention of these cells has been misdirected, for now they form no new vessels, but attack and penetrate the vessels of the decidua and extend into the musculature of the uterus, from whence they are carried into the blood current, or else push their way through the uterine wall and invade adjoining tissues and organs. The function of the new growth is clearly not to form vessels, but to destroy those already formed with which it comes into contact. Marchand has the honor of being the first to give a correct description of the

disease, which was based upon a painstaking investigation of the development of the human embryo and placenta. Other writers have observed similar structures in other organs, notably Schlangenhaufer, of Vienna, who in 1902 reported having found the same cell arrangement in a testicular growth which had extended to the veins. He pronounced it a teratoma.¹³

Schlangenhaufer also reports the case of a young girl of 13 years, a virgin, who had not menstruated. The tumor was diagnosed by the pathologist before he knew where it came from. Another case of Bocks's is interesting, where a mole was passed by a girl of 12½ years. The number of these cases proves that a substance closely resembling fetal or chorionic elements is found in many other organs, and we venture the assertion that many cases of chorioepithelioma would be difficult of diagnosis with the microscope alone and without the aid of a clinical history. It is considered difficult to draw a sharp line of difference between the fetal and the maternal parts. The sections selected and published in illustrated journal articles are taken from a vast number which do not display the respective structures in proper contrast for illustrative purposes. Again, we must remember that a section of a villus made from a very early specimen, as for instance an ovum of a few weeks, will show a very simple arrangement of comparatively few cells, while, on the contrary, a section made at or near term will show many more cells and a perfected vascular supply. Accordingly we find that the development of a deciduoma malignum shows very many different pictures, as we make sections from beginning cases, or from those having sufficient progress to include the uterine wall, or even beyond this point. In the early cases, as in any malignant growth, the cells are seen in the first act of proliferation, and such slides from one case would not afford sufficient information to establish a diagnosis if it were not for the aid of many other sections of cases made from other specimens at various periods of the growth, which can be used in comparison. In the process of infiltration the cell arrangement is lost, and it becomes necessary to try to identify the characteristic elements where they are seen in the section. Another feature which complicates and obscures the sections is the presence of blood clot and fibrin. This is more marked as the growth continues, owing to injury to the maternal vessels. It is not surprising that many observers have pronounced this disease "epithelioma." Even Marchand at first so considered it. But he, as did others, soon

found it unlike any other form of epithelioma, owing to the presence of fetal elements, and hence he gave it the name "chorioepithelioma."

Location of the Growth.—As may be inferred, the disease corresponds with the location of the placenta, and will, as a rule, be found on the mucosa in the earliest stages. But, as previously indicated, very often the uterine walls are involved, and possibly perforated before a diagnosis is reached. Frank alludes to the polypoid shape occasionally assumed by the growth, owing to the pressure of the uterine walls. This may explain some of the cases reported where intrauterine polypi have been invaded by the cells of the trophoblast.¹⁴ By far the most frequent location is at some point near the fundus uteri and corresponding with the location of the placenta. This would appear to throw this disease of the body of the uterus into strong contrast with adenocarcinoma, which is not only less frequent than epithelioma of the cervix, but has only a small relative mortality. In chorioepithelioma it is rare that the cervix is the seat of the primary growth, while the extension from the original location in the body of the uterus proceeds with appalling rapidity. Authors describe the appearance of uteri as "nodular" on the freshly cut surface, and these nodules extend here and there through the entire thickness of the wall and project outward under the peritoneal coat.

Malignant Hydatidiform Mole; "Blasenmole."—The origin of hydatidiform mole, like the pathology of other abnormal conditions connected with pregnancy, has been discussed at length, and we find that much doubt exists as to its pathogenesis. Here again we find Veit leading the opposition to what may be called the view of the majority. He believes there is maternal disease as a preliminary to the inception of the growth. Virchow speaks of "the irritated condition of the decidua serotina" as a cause of the myxomatous degeneration of the chorion. Waldeyer, Jarotzky, and Storch are mentioned by Veit as agreeing with him that this change occurs in the decidua vera (Handbuch, p. 560). If the vera was involved, then the mucosa was diseased before pregnancy occurred. Veit further says: "It (the disease) probably existed before conception in the wall, near the upper surface; secondarily, it had changed the endometrium; conception occurs; the ovum can remain healthy, or become diseased, or change to a *blasenmole!*" The tumor grows under the influence of pregnancy (hyperemia), and perhaps its structure changes by means of evo-

lution of connective tissue elements until it resembles decidua, or syncytium. Veit believes that some of these cases are "sarcoma deciduocellulare;" "in others there is nothing more than mechanical floating (?) of the transformed villi near the bloodvessels." Veit argues that the ovum may become imbedded in uteri, with carcinoma, sarcoma, fibroma, and endometritis present, and reasons that either one of these or some other condition influences the formation of a mole.

Marchand's classification is, however, generally considered satisfactory by authors. He says the villi are swollen, hydropic, or containing calcareous or hyaline areas. Macroscopically, this accounts for the grape-like bodies. Microscopically, the stroma may contain embryonic connective tissue cells and fetal bloodvessels, besides the above-named elements.

Diagnosis.—The cases collected by Teacher¹⁵ show that chorioepithelioma follows pregnancy in some form with the frequency mentioned below.

Of 188 cases which he had collected in 1893, 73 resulted from uterine mole; 36 resulted from abortion; 49 from labor at term; 2 were of tubal origin.

Excessive menstrual flow (menorrhagia) or metrorrhagia, and especially hemorrhage of spontaneous origin, which may follow either of the conditions named above, should excite attention. It is important that the débris removed from the uterus be microscopically examined in every case where curetting is necessary for hemorrhage after an abortion. As has been mentioned previously, a correct diagnosis can generally be made sufficiently early to advise hysterectomy with a promise of cure. It is not to be expected, however, that a diagnosis can always be made in time to prevent metastasis.

If the clinical history points to the disease, we may expect to find sufficient change in the size of the uterus to denote important alterations of the mucosa or musculature of the organ. We believe that it will be found the rule that metastases have occurred in a majority of cases presenting themselves for treatment if patients are left to their own volition. But it should be possible to investigate each case of metrorrhagia occurring after pregnancy, or the discharge of a mole, or an abortion, in order that such a fatal malignancy may be prevented. When the first hemorrhages have not yielded to treatment, and tissue necrosis has supervened, we may see precisely the same ichorous vaginal discharge as in cancer

of the uterus. An additional and very conclusive point in the diagnosis is the evidence of metastasis. Surely there is no other form of malignancy which produces this result at such an early period. As previously shown, this symptom is not always of fatal significance, yet cures after its inception are to be classed with those few cases reported by competent observers where patients have been so fortunate as to make spontaneous recoveries, or recovery after incomplete operations.

When the uterus is examined after the disease has made considerable progress, the external os will admit the finger easily, and the interior of the organ will be filled with more or less abundant material, which may be firm, like fibrous or sarcomatous tissue, or soft masses, indicating the stage of necrosis. The finger will be pushed entirely through the wall of the uterus unless great care and gentleness is used in the examination. Many observers note this fact, and, while it will serve to aid in reaching a decision as to the nature of the disease, it is nevertheless a mistake to further endanger the condition of the patient either by useless and dangerous examination, or even by incomplete operation. Veit and Schmorl speak of this feature of the disease, and, while they admit the danger of perforation, claim that certain destructive placental polypi also have this peculiar characteristic.

Metastasis.—It is a surprising fact that metastasis may occur before the nature of the disease is understood, and even before delivery. Williams's case may have been one of this kind. This is equally true of hydatidiform mole. It has been conclusively shown that metastases are most frequently seen in the vagina. Thus Finlay has collected the following statistics: Metastases in vagina, 14; lungs, 8; liver, 5; intestine, 3, and spleen, thyroid, suprarenal gland, retroperitoneal glands, heart muscle, ovary, bladder, labium, and mediastinum, each 1. Cures after metastasis have been reported from time to time, and we have been referred to papers by Marchaud, Kolomenkin, Albert, Noble, and others. We find that Noble¹⁶ has reported his case, and, while we cannot dispute the accuracy of the report, it is indeed rare that an incomplete operation is followed by recovery. We have carefully read some of the papers reporting cures after incomplete operations for metastasis, and are convinced that some of them are at least misconceptions and are misleading. Dunger¹⁷ reports having seen a nodule in the vagina of a patient two months after hysterectomy for chorioepithelioma; the patient recovered after the

excision of the vaginal nodule. We see in a recent publication a report by Walthard¹⁸ of a case of metastatic chorioepithelioma which had no apparent location in the uterus. The patient, a woman aged 27, and pregnant eight months, died of numerous foci in distant organs, which must have at least originated in the placenta.

Delayed Cases.—Hubbard¹⁹ reports a case of a woman who had an abortion, May, 1901; hemorrhage in October and hysterectomy January 28, 1902. The patient is now living and well. Hubbard further reports 66 operations for chorioepithelioma, with 24 per cent. mortality.

Indeed, Franqué, a very good authority, says a cure after embolism is possible if further infection or embolism can be prevented. Veit has cured 29 of his 89 cases (Handbuch, p. 595). Veit says that Sonnenburg, Mannheimer, Neumann, Freund, and Cazin report cures after metastasis had begun. Freund removed three nodules from the vagina, the patient having no recurrence in fifteen months. Mannheim and Sonnenburg found numerous extensions in the vagina and the introitus, yet one year and six months have passed without recurrence. Cazin found a metastasis in the right ovary, but there was no recurrence when the patient was seen three years afterwards.

Spontaneous Cures.—Several of these have been reported, but Teacher, one of the closest observers, says that Marchand and Fleischmann, have the only well-authenticated cases of spontaneous cures. Fleischmann's²⁰ patient, aged 30, two and a half years after passing a mole, had vaginal metastasis. The uterus was curetted, and the vaginal growth excised. The patient was well two years and eight months after, and is now pregnant.

Other cases have been reported as cured after metastasis in the lungs or elsewhere by Franqué (1903), Marchand, Everke (1895), Littauer, Risel, Langhans (1901), Zagorjanski-Kissel (1902), and Blumreich (1892).

Hormann²¹ reports a case of spontaneous healing after local treatment (curettement) of uterine and vaginal tissues. Later, pregnancy and successful delivery of the child.

Prognosis.—Although the disease is generally fatal, there is a marked difference in the rapidity of the changes observed in the development of the tumor, and the general course of the disease in different subjects. The vast majority of patients die of asthenia induced by repeated hemorrhages and the resulting anemia. It is,

as a rule, a fatal malady unless the uterus is removed before metastasis has begun. The mortality is greatly reduced by operation, and the prognosis should be reckoned accordingly.

Teacher²² reports 188 cases which he collected, 99 of which had hysterectomy performed with the following results:

<i>Preceding pregnancy.</i>	<i>Cases.</i>	<i>Deaths.</i>	<i>Recoveries.</i>	<i>Per cent.</i>
Hydatidiform mole....	42	9	33	78.5
Abortion	36	16	20	55.5
Term	19	10	9	47.3
Tubal	2	1	1	0
	<hr/> 99	<hr/> 36	<hr/> 63	<hr/> 63.6

Of 36 deaths, 11 occurred within a few days after operation, 9 made a good recovery, and 5 had an interval of several months of good health; 25 died after expiration of six months; 3 remained well one year.

Dorland and Metoz report 70 and 90 per cent. mortality respectively. Of Teachers's cases, 87 had no operation, 83 died, 2 were not reported, 2 spontaneously recovered. Ladinski thinks 59 per cent. mortality nearly correct.

The case prompting this paper represents what may be called a borderline case. The patient was a young woman of about thirty years of age, who had always had good health until recently, when her periods began to be irregular. She was sent to a local physician for examination, and he, finding that she had persistent flow, advised a curetting, which was done. The pathologist of the hospital, a good microscopist, was surprised to find what he thought to be sarcoma, and a consulting pathologist was called, who agreed with the former investigator that they had a genuine case of sarcoma, and advised prompt hysterectomy. The writer was called in at this juncture, and, finding the uterus larger than normal, and learning the history of the case and that two very competent men had pronounced the disease a malignant one, consented to perform a radical abdominal hysterectomy operation. The patient made a perfectly satisfactory recovery from the operation. The second examination, made after the hysterectomy, has enabled us to better understand what has since been admitted, that the young woman had been pregnant, had an abortion, and, having a persistent flow afterward, was sent to the city for treatment. When the slides were reexamined, it was possible to see how the mistake was made which has been mentioned. We must here claim

for those who made the first examination and incidentally for ourselves, that many eminent men have likewise been mistaken, for this disease was entirely misunderstood until Säger discovered its relation to pregnancy. Even yet, as we have said, some of the best-known and most competent men still declare that chorioepithelioma and deciduoma malignum are essentially sarcoma.

I am only able to report having encountered one case besides this one, which may be called malignant. The pathologist assures me, however, that the specimen was obtained some years since, and the case was not suspected until the time of operation. The patient recovered, left the hospital, and has not been seen or located since that time.

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STONELEIGH COURT.

THE EFFECT OF BLOOD TRANSFUSION ON A PATIENT WITH PUERPERAL SEPTICEMIA.

BY

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My object in reporting this case is to show that the rigors of puerperal septicemia may be abolished by the transfusion of blood. I also wish to point out the negative effect of enormous injections of antitoxin in this case, and lastly I wish to describe my method of transfusing blood.

The patient, aged twenty-five years, was sent to my private hospital by a general practitioner, who told me that the patient had been prematurely confined of a seven months' child. The placenta had not come away satisfactorily, so he had introduced his fingers into the uterus, and a few days later, when the temperature rose, he had curetted the uterus. Three days later (the fifth day after labor) she was admitted into hospital. She had a slightly offensive discharge, and was ordered a douche, and antitoxin was injected.

Having found on several occasions that the antidiphtheritic serum seemed to act well when the antistreptococcus serum failed, I ordered her to have 2,000 units of these sera alternately every four hours. As she showed no signs of improvement after thirty-six hours, I administered an anesthetic, and made an examination with my hand covered with a rubber glove. A specimen of the uterine discharge was saved for examination, and the examination showed that it was a streptococcus infection.

The uterus was found to be quite empty, so nothing was done beyond douching it with hot water.

The patient grew steadily worse after the examination, so the antitoxin was increased.

The amount given is shown in the following table:

Date	Kind of Serum	Amount Injected Each Time	Frequency	Total Quantity
February 28 to	{ Antistrep.	2,000 units....	Every four hrs..	{ 20,000 units. 16,000 units.
March 3	{ Antidiph.			
March 4.....	Antistrep.....	6,000 units....	Once.....	6,000 units.
March 5 to	{ Antistrep.....	8,000 units....	Alternate days.	14,000 units
March 10	{ Antidiph.....			
March 13.....	Antistrep.....	8,000 units....	Once.....	8,000 units.
March 14 to	{ Antistrep.....	24,000 units....	Once a day....	168,000 units in 7 days.
March 20				
March 22.....	Antidiph.....	24,000 units....	Once.....	24,000 units.
Total amount of serum injected in 23 days.....				{ Antistrep., 216,000 units. Antidiph., 72,000 units.

When the amount of serum injected was small a large syringe was used, but when the amount of serum was large it was found

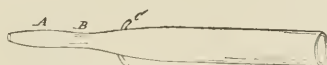


Fig. 1.—Glass cannula. C, glass wings around which the silk ligature that fixes the cannula on the vein may be twisted, so as to prevent the cannula being torn out of the vein. The slight swelling, A, and the neck, B, will both aid in keeping the cannula on the vein.

more convenient to mix it with an equal quantity of normal saline and allow it to run into the axilla from a reservoir. In spite of the number of injections only one small abscess formed.

Rigors.—Rigors began on the fourth day after the patient was admitted to the hospital, and continued almost daily until the joint transfusion of blood and saline.* After this transfusion—

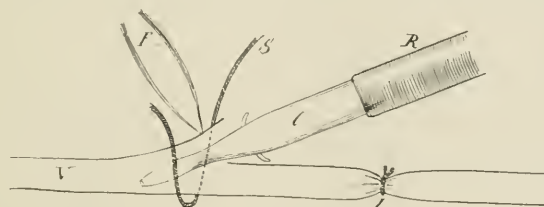


Fig. 2.—Cannula, C, is pushed through the opening in the vein, V; the fine forceps, F, holds the lid formed by the incision. S, silk ligature. L, ligature on vein. R, rubber tube connected with the funnel.

in which not more than a few ounces of blood was employed—the rigors disappeared for six days, then began again. Thinking that perhaps the salt solution, introduced with the blood, had brought about the happy result, I opened a vein and gradually introduced 30 ounces of normal saline, to which one ounce of peroxide of hydrogen had been added.† The patient had a most severe rigor forty-eight hours later, the temperature rising to

*See temperature chart, letter A.

†See temperature chart, letter B.

106°. On the day following this rigor blood and normal saline were transfused.* The amount of blood used on this occasion was about ten ounces, and the amount of saline about twenty

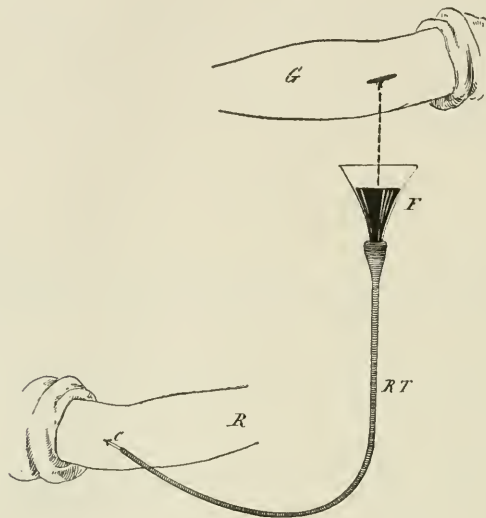


Fig. 3.—G, arm of Giver. F, funnel receiving the blood of the Giver. RT, rubber tube going to C, cannula in Receiver's arm, R.

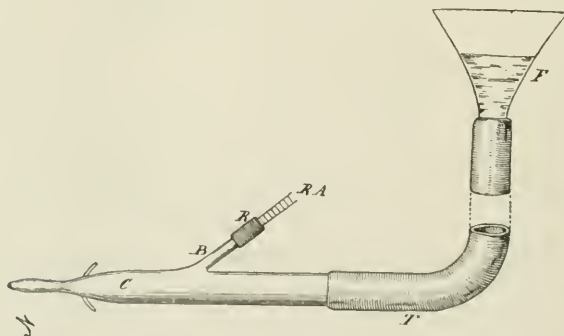


Fig. 4.—C, Cannula with rubber tube, T, and funnel, F, attached. B, small glass branch to which is attached rubber tube, R, into which enters the radial artery, RA.

ounces. After this transfusion the patient had no more rigors, so that she was free from April 7 until the day she died, April 19.

*See temperature chart, letter C.

During this time the pulse and temperature improved, and the patient progressed so rapidly that she was allowed to sit up in bed supported by a bed-rest; whilst in this posture she fainted and died in a few minutes.

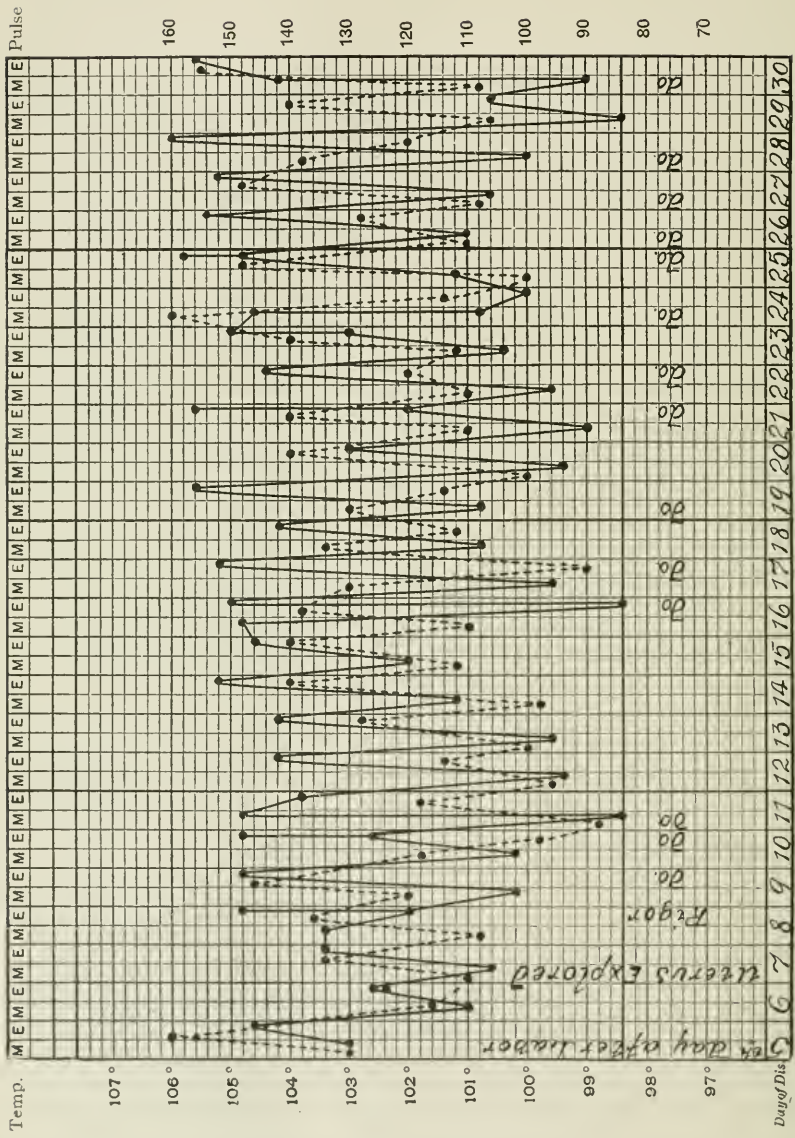
Method of Transfusion.—When I first determined to try transfusion I tried Aveling's method with a syringe, and very nearly killed the patient, for, by some means, I managed to pump some air into her vein, and after a few seconds she cried out, and to all appearances suddenly expired. Artificial respiration was carried out for about fifteen minutes and she gradually revived and regained consciousness.

A few days later I determined to try a new plan and this was partially successful, and later on I improved the plan until it became quite successful, and I was able to introduce ten ounces of blood in five minutes. I have since tried this method of transfusion on other patients and now claim it to be a simple and efficient method, not requiring any of the technical skill that must be employed when transfusion is done by joining one vessel to another.

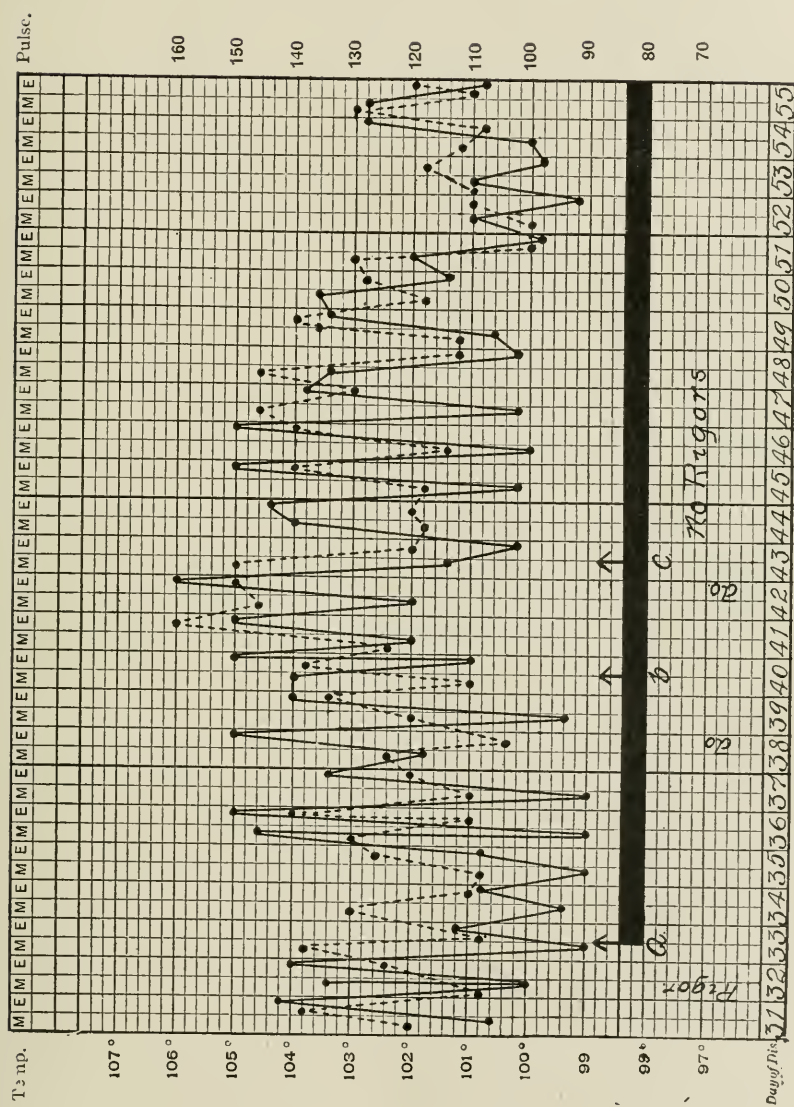
Apparatus Required for Transfusion.—(a) A glass cannula; (b) four feet of rubber tubing; (c) glass funnel holding six ounces; (d) fixation forceps with fine teeth and a spring catch; (e) scissors, scalpel, silk ligature, flat probe; (f) solution of cocaine; (g) hot normal saline solution.

The glass cannula (Fig. 1) that is introduced into the receiver's vein should be two inches in length. One end is drawn out into a fine point. A little over half an inch from the fine extremity two small nobs of glass are fused into the sides of the tube (Fig. 1c).

Steps in the Operation of Transfusion.—(a) The skin of the *Giver* is sterilized over the region of the median cephalic and basilic veins; (b) a small quantity of cocaine solution (1 per cent.) is injected, and the vein is exposed, after which a flat probe is slipped under it; (c) the arm of the *Receiver* is prepared in the same way, and the median basilic, or cephalic, vein having been selected, a ligature is placed around the exposed vein and tied. A flat probe is slipped under the vein on the proximal side of the ligature and a silk ligature is also passed under the vein (Fig. 2). (d) An assistant having fixed the rubber tubing to the glass cannula and to the funnel, fills the latter with salt solution, which in turn fills the rubber tube and the cannula. (e)



McKay: Puerperal Septicemia. Solid lines show temperature; dotted lines pulse.



McKay: Puerperal Septicemia. Solid lines show temperature; dotted lines pulse.

The vein of the *Receiver* is seized in the teeth of the fine forceps and an opening is made with a pair of fine sharp scissors. The forceps enables the operator to pull up the tiny lid in the wall of the vein, while he rapidly introduces the glass cannula through the opening. Immediately the cannula is successfully introduced, the assistant ties the silk ligature firmly around the cannula, and then winds the free ends of the silk around the nob's on the side of the cannula, so as to prevent it being withdrawn from the vein. (f) During all this time the salt solution has been running out of the end of the glass cannula. I found that it was a mistake to introduce the cannula joint and then attach the rubber and funnel, as the cannula always seemed to get blocked with blood clot. (g) If all has gone well we shall see that the salt solution gradually descends in the funnel. The *Giver* is now brought up to the bedside, and the vein that we have already exposed is opened by a snip of the scissors. Immediately his blood pours down and falls into the salt solution in the glass funnel, and is carried into the vein of the *Receiver* (Fig. 3).

Remarks.—The first objection that will be raised to this method is that a blood clot may be carried into the *Receiver's* vein. The reply to this is that the drawn-out extremity of the glass cannula is so fine that no clot bigger than a pin's head could be carried into the vessel. One might introduce a very fine sieve between the end of the rubber tubing and the glass cannula, and this would absolutely prevent any clots passing.

Another objection that may be urged is that the blood cells will be injuriously affected by the saline solution. The blood will be less injuriously affected if we have a good flow of blood and a small amount of saline solution. This end is to be gained by opening the radial artery of the *Giver* instead of his vein.

If the commixing of the blood with much saline solution should indeed prove to be an objection to the method that I practise, I would suggest this alternative, which is illustrated in the following diagram (Fig. 4):

C is a glass cannula with a fine branch *B*. To the cannula is fixed a rubber tube *T* and funnel *F*. To the branch *B* is fixed a short rubber tube, say an inch in length. When the cannula is fixed in the vein of the *Receiver* the salt solution runs in and shows that all is free. Then the radial artery of the *Giver*, which has been dissected up for an inch or more, is pushed into the rubber tube *R* and the blood flows on into *C* and then into the

vein. The flow of the saline through *T* can then be checked, or only a very small quantity need be allowed to flow to help the flow of blood through *C*. I recently transfused blood in a case of pernicious anemia, and finding that the veins of the arm of the *Receiver* were small, I opened the internal saphenous vein of her leg, but the saline would not run. Then I opened a vein in the other leg, and still I could not get the saline to run; evidently these veins were blocked. I then tried a vein in her arm, and was successful. On another occasion I failed with the arm veins, and was successful when I tried the leg veins.

The great advantage of the method that I have here described over the method of joining the vessels together is its simplicity. Again, the method can be used when the *Receiver* is suffering from septicemia; the *Giver* runs no risks. Before I had perfected the method I endeavored to transfuse blood from a father into a daughter for hemorrhage, after a severe operation on a kidney. I did not realize that the *Receiver* was in a septic condition; the consequence was that the *Giver* was laid up with blood poisoning for six weeks after.

In conclusion, let me say that I consider that there are great victories awaiting physicians, as well as surgeons in the near future, when transfusion will be more widely practised. Already we may say that for hemorrhage and shock, blood transfusion can do more for a patient than any other therapeutic means that we can employ.

In the case of septic poisoning, the transfusion of six or less ounces of fresh blood into the patient's veins cannot fail to help to overcome the systemic poisoning.

The remarkable effect that blood transfusion had on the rigors in the case that I have reported above will justify us in giving transfusion an extended trial in such cases.

15 ONSLOW AVENUE, ELIZABETH BAY.

THE TIME FACTOR IN SURGICAL OPERATIONS.*

BY

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APPARENTLY the time factor in surgical work seems to have attracted little attention in some quarters, and to be practically lost sight of in others. It is safe to affirm that the characteristics of the operator find expression in his work. These are modified by habit, environment, conviction. One operates slowly as a matter of habit or impulse, not appreciating the relation time bears to success or failure. Another works with more rapidity, moved by better ideals, but not responsive to the higher impulses; while a third, appreciating all or many of the reasons for conservative haste, performs his task under the sway of enlightened judgment and conscience.

Other things being equal, there is no comparison to the superior work of the latter. I grant these are truisms, and very likely have no application to the methods and results of my listeners. However that may be, I am confident none of us have reached such a perfection of technic, or such mastery of detail, that nothing further remains to be learned.

The influence of this Association, happily, is not limited to the small circle of its immediate fellowship, but reaches a large constituency, and it is to both I appeal, fortified by a firm and growing conviction that much of failure and somewhat of disaster, are directly traceable to a partial and imperfect conception of these truths.

It is a generally accepted maxim in the profession that the time of a surgical operation should be as short as possible, but it is fair to assume that many operators have no adequate appreciation of its meaning or the increased shock caused by an operation lasting fifty or sixty minutes, which might by a more skilled operator be performed in half the time. In persons who are young and vigorous, some delay may not imperil the results, but with the aged and debilitated, whose powers of resistance are low, every

*Read before the American Association of Obstetricians and Gynecologists, at Detroit, September 17, 18, and 19, 1907.

moment consumed with the anesthetic and the operation bear a close and vital relation to the degree of shock and the impairment of the vital powers of the patient.

These untoward influences are more noticeable in abdominal operations and in cases where the loss of blood is excessive, and where much traumatism is unavoidable. I enter on the task of formulating rules to minimize these risks, with no expectation of covering more than a small portion of this broad subject, yet in the hope of offering some suggestions which will prove helpful in shortening the time of operations. In an orderly discussion of these matters, the preparation of the patient will be briefly noticed. Without going into detail—for that is outside the scope of this paper, except so far as the time factors are concerned—it must be insisted on that every preparation possible be completed before the administration of the anesthetic.

In most cases the field of operation can be fully prepared and the parts covered by moist antiseptic gauze. In some cases much valuable time is lost in shaving and sterilizing the parts, which is without justification unless unavoidable. The patient should wear such undergarments as will be suitable after the operation is over, and as far as possible the field and the body kept dry; otherwise a delay is occasioned in drying the parts and changing the garments when the operation is completed. Careless and unscientific use of anesthetics too often leads to vexatious and unnecessary delay.

An anesthetic should be intrusted to a skilled anesthetist. Probably in the various stages of an operation more time has been needlessly sacrificed here than in any or all other details. Lack of ability of the anesthetist not only disconcerts the operator, but jeopardizes the patient. Rapid production of anesthesia is desirable. Delay is often caused by mixed anesthesia. Beware of it if you are in doubt as to the proper antidote. The change and delay usually arise in not allowing an unlimited amount of air to mingle with the ether or chloroform. Any appliance which conduces to the breathing of exhaled air cannot be too strongly condemned. More deliberation is required in the use of chloroform. By a proper use of an Allis inhaler for the administration of ether, few subjects, save alcoholics, should require more than five minutes for the production of surgical anesthesia. A lack of this even administration of the anesthetic is responsible for reflex vomiting and inquietude of the patient, both of which delay

the operator. Lack of preparedness by the anesthetist of remedies to combat any accident due to ether or chloroform, or for the relief of shock, has sacrificed many a life or prolonged many an operation to the avoidable hazard of the patient. It not infrequently happens that delay occurs during anesthesia because salivary secretions have been allowed to accumulate in the mouth and pharynx. The expert anesthetist will anticipate any such accident by wiping away the secretion, or allowing it to escape by gravity. Appreciation of, and facilities for the quick shifting of the patient from one position to another is frequently a most effective device for saving time. One demonstration of this is witnessed in the change to and from the Trendelenburg posture, a device which carries with it most valuable assistance.

Few conditions put the operator to a greater disadvantage than inability to control hemorrhage, either from bloodvessels difficult to secure, or oozing from surfaces where ligation is impracticable or inadequate. Particularly is this true in some intraperitoneal operations, as in oozing about the liver and in deep portions of the pelvic cavity, where distended and protruding intestines make difficult necessary manipulations. One expedient I have resorted to, where prompt pressure was necessary to control the bleeding, is the use of the Mikulicz tampon. This is a simple gauze bag, open at one end, $\frac{1}{2}$ to $2\frac{1}{2}$ or 3 inches in diameter and of a length from 2 to 5 or 6 inches—long enough to protrude outside the abdominal cavity. This is to be introduced to the bleeding point or area, and packed, or partially packed, as indicated, to produce such pressure as will control the bleeding. The special advantage of this form of pressure over that of packing with free gauze, arises from ability to vary the pressure according to indications. Particularly is this true of the bag which is over one inch in diameter. Here gauze can be packed from the center to the circumference, or *vice versa*, thereby regulating the pressure as required. It is sometimes highly advantageous to remove this packing by degrees, beginning at the center and watching for indications of a return of the hemorrhage, in which case it can be replaced without disturbing the relation of the bag to the bleeding points or areas. In cases where drainage is indicated it meets a double indication by also acting as a means to indicate returning hemorrhage.

I am confident the Fellows of this Association who have never resorted to this expedient will employ this device with much satisfaction. Another error into which some operators have unwittingly fallen—which needlessly consumes valuable time, is the breaking, by overtying, of ligatures and their necessary reapplication, the evils of which I mentioned in a paper read before the Section of Obstetrics and Gynecology of the American Medical Association at the June meeting at Atlantic City. How many of us have witnessed the reapplication of ligatures, particularly catgut, broken under the mistaken notion that extreme tying tension was needful to safety, when observation and experience have amply demonstrated its fatuity.

The maintaining of proper bodily temperature during the operation often lessens shock and so becomes a factor in avoidable delay. Lack of facilities for rapidly changing the position of the patient on the operating table frequently places the operator at a great disadvantage and minimizes the prospect of success. The careless preparation, use and disposition of gauze sponges is prolific of wasted time. These should be orderly arranged according to size and the purpose of their use, before the operation commences. Nothing is more tantalizing than delay in counting sponges. Except in rare instances, no such delay is permissible. This may be obviated in abdominal operations by using only long gauze pads, so that intraperitoneal loss is impossible.

The same orderly arrangement of instruments tends to simplicity and rapidity of work. The more skilled the operator the fewer tools he uses. Ligatures and sutures, with needles, should be ready when needed—not somewhere near—but at hand and threaded. Failure to have in perfect preparation all dressings to be applied at the close of an operation is inexcusable.

Another matter too often forgot, and too frequently responsible for delay and perhaps disaster, is unpreparedness for the accidental or the unexpected. The readiness of instruments and appliances in these varying emergencies is a part of the stock in trade of the resourceful and successful operator. To the accomplishment of this end, the aid of trained assistants and nurses is indispensable. In this, as in other matters, I have my ideals. They may not be attained, but they are striven after. The assistant and the nurse, who have worked by my side until they are able not only to meet but often able to anticipate my wishes, are invaluable. In well-

ordered hospitals their approximation to these ideals is most likely of accomplishment.

It may be asked what preparation I have found most useful in time-saving in domiciliary operations. If in town, two assistants and two nurses are usually sufficient. In out-of-town, and perhaps remote points, one tried assistant and one tried nurse—with whatever added assistance may be found there—usually fulfill every need. It is one of the first duties I owe to myself and my clients to always have at my command such helpers. To this end I am ever adding to my list of trained nurses such as have, by observation and experience, proven themselves to possess the needed qualifications. It is the capacity and faithfulness of tried assistants and nurses which makes possible satisfactory work in emergency cases who must receive surgical aid, if at all, outside the precincts of a well-ordered hospital.

One other emergency which may have a most important bearing to this time factor, and which is perhaps the severest ordeal to which the operator is exposed, and which tests his judgment and demonstrates his resourcefulness, is the necessity of changing his diagnosis during an operation and his ability to grapple successfully with the unexpected conditions. In conclusion, I desire to urge on all surgeons the cultivation of those methods which tend to promote rapid operating. By this I would not inculcate haste at the sacrifice of thorough work or proper attention to detail, but such concentration of mind and such rapidity of manipulation as will bring to as early a close as possible every surgical procedure. In reviewing my own experience I have to regret my lack of earlier appreciation of these teachings, and can bear testimony to their practical value.

Finally, it may be confidently affirmed that a compliance with these suggestions in their technical significance is no substitute for capacity, adaptation, patience, courage, love of work, and the exercise of sound judgment, the harmonious blending of which makes the truly successful surgeon.

936 ST. MARKS AVENUE.

RUPTURED PUS TUBES.

BY

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So much has been written on the subject of pyosalpinx that I hesitate to write a paper which has the words pus tubes in its title, and yet the question of rupture is not given much space in the text-books, usually being dismissed with the statement of the different forms which the rupture takes. A few cases have been recorded, but I can find no article dealing directly with the form of rupture which I wish to discuss. I wish first to review a few points in the earlier stages of the disease so disastrous in its results.

Price, Johnson, Humiston, and many others think that from 90 to 95 per cent. of infections of the tubes are primarily due to the gonococcus. There may be a mixed infection at certain stages of the disease, but unless the diplococcus is, or has been present, the streptococcus and colon bacillus do not as a rule cause much harm, except after labor or abortion, and then their course lies through the placental site, through the blood and lymphatic system to the parametrium, peritoneum, or general circulation, and unless the gonococcus is present they do not generally cause tubal involvement.

The course of a gonorrhea, after the cervix is involved, is usually chronic, and it is rare for cure to occur within many months, the germs often lying dormant in the deep glands of the cervix for years, and from these, at any time, although most commonly at the monthly period, or after labor an endometritis or salpingitis can be set up. A true pyosalpinx is probably never cured, that is, never returns to its normal state; the abdominal and uterine ends of the tube become closed, and they very seldom reopen. The pus may become inspissated, leaving the tube a fibrous band, or a hydrosalpinx may be the termination.

In a large proportion of cases the pus becomes sterile, and in many others the germs lie latent until a menstrual period, a

severe chilling or exposure, or even an abortion, produces an exacerbation. Rather an interesting point is brought up when we consider the pathological cause of these exacerbations of pain, fever, and pulse that occur in the more or less chronic cases of tubal involvement. Lawson Tait, in his early work on this subject, considered it due to new areas of peritoneal involvement from small particles of pus escaping from the extremity of the tube. Most authors, including Dudley, Kelly and Ashton, do not entirely agree. Dudley gives three methods of peritoneal involvement: First, by escape of pus through the fimbriated extremity, which is rare, I believe, except in the early stages; second, passage of germs through the walls of the tube when adhesions are present between tube and bowel, or other parts; third, passage of germs through the mesosalpinx. A fourth may be added to Dudley's classification: *direct* rupture through the walls of the tube.

I do not believe that these exacerbations are always due to extension of peritoneal involvement. Wertheim and Wasserman showed that injecting filtered cultures of dead gonococcus caused pain, fever, and pulse, whereas injecting filtered cultures from live germs produced no reaction. The latency or power of life without activity of this germ is well known, and Rodgers believes that this latency is to be explained on the ground that the mucous membrane primarily involved gradually becomes an unsuitable culture medium. These exacerbations of the disease we see so frequently in the purulent type of pyosalpinx are most apt to occur at the menstrual period when the blood supply of the pelvis is increased, and when serum can be thrown from the blood into the tubes, giving fresh culture medium, thus causing increased growth of the germs. In their fight for existence many die, and their toxins, absorbed from a closed cavity, may cause the symptoms noticed.

Either this or a new infection from without may explain such cases as show no new areas of involvement.

There are, of course, cases where pus or germs escape from the tube or ovary (which may be involved with the tube) in one of the ways mentioned, but it is rare in these cases for a general peritonitis to follow. It does occur, however, and Hunner and Harris of Johns Hopkins report seven cases and thirty-seven more from the literature in which at either operation or autopsy a general peritonitis was found with pus tubes as the starting point. Whether any of these cases were due to rupture they do not say.

They advise against operation, unless there is a question of diagnosis, and give some of the characteristic symptoms as follows: "This peritonitis is characterized by a sudden onset and rapid progress toward the climax of the disease. The abdominal pain, tenderness, meteorism, bowel disturbances (usually constipation), nausea, and vomiting, are common to general peritonitis from other causes, but from the few cases I have seen it seems to me that the high temperature 103° - 104° is reached more quickly than in most other peritonitides, the patient often showing great early prostration. I feel that the special characteristic of the gonorrheal form is its sudden abatement, the patient, if in bed, showing decided improvement within twenty-four hours."

I do not quite agree with him as to treatment. The difficulty of diagnosis between the condition and other suppurative conditions within the abdomen is sometimes impossible, and, even if possible, and the condition is not always hard to diagnose, I believe an operation gives by far the best chance for life in the acute early cases. The improvement in the patient's condition I have not seen where pus has been free in the peritoneal cavity, unless the cause or starting point was removed.

Clinically, ruptured pus tubes may be divided into three classes:

First.—Those which rupture into the peritoneal cavity, but in which the pus is restrained by adhesions from setting up a general peritonitis.

Second.—Those which rupture into some adherent viscus, as the bladder, intestines, or rectum.

Third.—Those in which the rupture is into the peritoneal cavity, the pus not being walled off, and, if virulent, setting up a general peritonitis which acts much like an acute ruptured appendicitis, and usually causes death unless operative means are employed. It is, however, more amenable to operative measures than peritonitis caused by appendicitis.

By far the most common class is the first, and pus escaping from a tube is most likely to be confined by adhesions. The abscess often reaches above the umbilicus and contains a quart or more of pus, this finally rupturing into the bowel or peritoneal cavity, or causing death by absorption of toxins.

In the second class, the danger of secondary infection through the sinus is great, and complete cure is obtained only by removal of the tube and closure of the sinus opening.

Of the third class, or that of direct rupture without walling off of the pus, I have several cases which I wish to report.

In looking over the literature of this subject for the last twenty years, I can find only twelve cases reported that have ruptured directly into the peritoneal cavity. This does not, I think, show the relative frequency, for these cases are apt to be very fatal, unless operated on early, and, as a rule, fatalities are not reported. The cause of rupture may be traumatism from childbirth, examination, or a blow, or it may be spontaneous, due to ulceration or overdistension; ulceration is, I think, the more frequent. Of the twelve cases in the literature, eight were operated on and recovered, two died after operation, and two were found post mortem. This is probably much more favorable than if more cases were recorded. To these I wish to add the reports of three cases operated on with recovery, and to mention a fourth found after death.

CASE I.—Mrs. E., a woman of the lowest class, was sent me by Dr. E. L. Beebe and admitted to the Buffalo General Hospital, February 16, 1907. She was badly nourished, thin, and anemic, showing the effects of the life she had led. The history of pelvic pain reached back for several years, but for the last three weeks there had been an exacerbation of her old symptoms. On admission her temperature was between 100° and 101° , pulse about 100, and respiration 22. I examined her the morning of her admission, and found her pelvis hard, uterus immovable, and a mass on either side, an old pelvic peritonitis. She was put on a douche, tampon, bed, and diet treatment until her symptoms should subside.

The evening of the second day some of the symptoms of peritonitis began to show, according to the house surgeon, and on the third morning the presence of a more or less general peritonitis was plain. Temperature 97° , pulse 129, respiration 44. The blood showed leukocytes 18,000, red cells 3,700,000; hemoglobin 75 per cent.; iodine reaction positive. The picture was that of shock, with restlessness, bright eyes, a septic look, and the abdomen hard and much distended. No positive opinion as to the cause was given by the several surgeons who saw the case, and ruptured pus tube was not thought of.

My own diagnosis was ruptured appendix, and under ether anesthesia an incision was made over McBurney's point. The intestines were injected, but the appendix was very small, otherwise normal. A mass could be felt lower down on both sides, but as it was impossible to break up adhesions through the appen-

dix incision a median opening was made. On account of the intestinal distension the right tube was delivered, tied, and cut off by feeling. The pelvis was wiped dry and the abdomen closed; a hydrosalpinx of the left side was not interfered with, as the patient's condition was not good. A glass drainage tube was left in the abdominal wound and iodoform gauze in the cul-de-sac. These were removed on the second and third days respectively.

The tube about the size of one's thumb was found ulcerated and perforated about one inch from the fimbriated extremity, some of the purulent material still being within. Time of operation, 35 minutes. Patient made an uninterrupted recovery. No cultures were made of this case, although clinically the diagnosis was gonorrhea.

CASE II.—Mrs. B., admitted to the Buffalo General Hospital, June 18, service of Dr. M. D. Mann. Age 42. Married; three children, youngest twelve years old; two miscarriages after the last, nine years ago, was in bed four weeks with pain in lower abdomen, fever, and rapid pulse; from this time until three years ago was in fair health, when, at a menstrual period, pain in the sides of the abdomen began, and she was again in bed four weeks. Has not been well since; pain in back and sides radiating down the legs.

On the 16th of June she was examined by Dr. J. A. Riester of Buffalo, who made a diagnosis of tuboovarian abscess. Two days after seeing her he was called in at night, the patient being almost in collapse from the severity of the pain. The abdomen was then rigid, and the mass on the right side very much smaller than at first. The correct diagnosis was made and the patient operated on the same night. The sac contained about two ounces of purulent material. The rupture was in the ovarian portion of the sac, being about the size of a ten-cent piece. The abdomen was washed out with salt solution and the wound closed with drainage. Patient has made a good recovery. The microscopical examination of the pus showed an intracellular diplococcus not staining by Gram stain. By culture a diplococcus growing on acetic agar, but not on ordinary, was obtained in pure culture.

CASE III. might not be called a true rupture, as the pus was forced through the fimbriated end of the tube. The history, as it was given to me, follows: "I was recently called in consultation to see a lady of about forty years of age with the following history: Had been suffering for several years with an old

pelvic inflammation specific in character. The evening before I saw her she had been taken suddenly with violent pain in the lower portion of the abdomen. This was soon followed by a chill and rise of temperature. The abdomen became bloated and tender to the touch all over. There were several chills, and her condition continued to grow worse. When I saw her, her temperature was 102° , and the pulse quite rapid and weak. Diagnosis was uncertain. Rupture of an appendical abscess, rupture of pus tube, and extrauterine pregnancy were all thought of, but no definite conclusion was reached. Operation showed a tube from which the pus was leaking and beginning peritonitis. The tube was removed, the abdomen drained, and the patient made an uninterrupted recovery."

CASE IV. is taken from Dr. H. U. Williams's post-mortem records. It is that of a woman dying ten days after giving birth to a normal child. A general peritonitis was found, the starting point being a pus tube from which pus had been pressed through the fimbriated extremity during labor. The tube on the opposite side was normal.

Two of the twelve cases which I spoke of as being reported occurred during pregnancy, one at the fourth month and the other about term; both recovered with operation.

It is hard to draw conclusions from so small a number of cases, but of the thirteen operated cases two died, 85 per cent. recovering, and in the two that died the operation was admittedly late. It would seem that operation was imperatively demanded, and as early as possible.

It would be extremely difficult to diagnose this condition after labor, but with symptoms of peritonitis occurring, Pryor's operation opening the cul-de-sac is not employed enough, as many cases can be saved by this procedure if not done too late.

Particular attention should be paid in these cases to asepsis. I have repeatedly seen men relax their care or remove gloves in these difficult cases where pus is found in the abdomen, and it is in these cases that most care is needed. The patient's resistance is lowered, and where the peritoneum may resist the attack of the diplococcus it will not resist that of a mixed infection.

Most surgeons hesitate to operate during the acute stages of a pyosalpinx, and rightly so, but when symptoms of general peritonitis begin, to temporize is in my mind not giving the patient the best chance. When a large abscess can be made out, drainage

through the cul-de-sac is best; but even in these cases it is surprising how much infection the peritoneum will take care of when the cause is removed and when the infection is due to the gonococcus.

First.—Remember that these abscesses do rupture, and be careful in the examination.

Second.—With the history of pyosalpinx and beginning peritonitis, operation is in order, even in the acute stages.

Third.—Prognosis is much brighter in these cases than in ruptured appendix, due to the nature of the infection and the resistance of the patient.

37 ALLEN STREET.

INFLUENZAL MENINGITIS.*

BY

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WHILE meningitis has been recognized many times as a complication of influenza, since the epidemic of 1889 and 1890, yet in only a few of the cases reported has the diagnosis been based upon sufficient bacteriological evidence, as pointed out by Dr. Adams in his interesting study of this subject in a paper read at the nineteenth annual meeting of the American Pediatric Society at Washington, D. C., May 8, 1907.

In the twenty-one cases collected by Adams, the influenzal meningitis seems to have been positively identified by adequate bacteriological examination. The Pfeiffer bacillus was obtained in pure culture from seventeen cases in which lumbar puncture had been made, and in four from the spinal exudate at autopsy. In this collection of twenty-one cases there were fourteen males, five females, and two whose gender was not stated. Fourteen were one year of age or under; five between one and ten years; one between ten and twenty years, and one between twenty and thirty years. In three cases the duration of the disease was five days or less; in ten cases the duration was between five and fifteen days; in two cases between sixteen and twenty-five days, and in five cases over twenty-five days. One case died in three days, which

*Read before the Washington Obstetrical and Gynecological Society, May 17, 1907.

was the shortest case reported. The two longest cases reported were six weeks, one of which died and the other ended in recovery. Of the total twenty-one cases, three recovered: one in ten days, one in six weeks, and one in twenty-seven days. In each of these cases the Pfeiffer organism was demonstrated in pure culture from lumbar puncture.

I was called on Sunday, May 12, 1907, about 8 P.M., to see O. S., white, male, age 4 years 2 months, American, because he had been having headache during the day which had not been relieved by home remedies.

The following history was obtained: On Saturday, the 11th, the child had seemed perfectly well and had played as usual all day with his sister and brother and two other children. At luncheon he had eaten canned strawberries, the only unusual variation in his diet. During Saturday night he was restless, sleeping for one or two hours; would waken with a start, and complain of headache, but would go to sleep almost immediately. Sunday morning his mother, believing the disturbance was due to some intestinal indigestion, probably resulting from the strawberries, at 9:30 A.M. gave him two drams of castoria and at 10 A.M. a simple enema. The latter resulted in the passage of only a few fecal masses and slight discoloration of the water. One hour later he had a small brownish-yellow frothy movement. He became nauseated soon after the enema and vomited three times a yellowish fluid, apparently without odor, which probably contained all or part of the juice of half an orange which had been given two hours before.

Temperature at 8 A.M., 101°; 10 A.M., 101.1°; 12 M., 101.5°; 4 P.M., 102.4°; 6 P.M., 102.6°.

During the day he took only water, slept almost constantly, but would waken complaining of pain in the head, was restless, turning in bed, would grit his teeth and moan in sleep. He seemed to answer questions intelligently during the day. At 8 P.M., when I first saw him, his temperature was 102.4°, pulse 90, respiration 36. At this hour he said that he had no pain, but "just felt sick." His face was flushed; tongue slightly coated. Believing with his mother that he was suffering from some digestive disturbance, I gave him the following prescription: Calomel, gr. $\frac{1}{4}$; phenacetin, gr. ii.; sodium bicarbonate, gr. i.; sugar, gr. v.: to be taken every hour until bowels moved or two grains of calomel had been taken.

Careful physical examination revealed nothing abnormal. Re-

flexes not tested, as this did not seem especially indicated. As I was not entirely satisfied with my diagnosis, I instructed the mother to notify me if any change took place. At about 1:30 or 2 A.M. she telephoned that he was delirious. About 9 P.M. he had become more restless and would stiffen his entire body, with the head thrown a little back for a few minutes; then would apparently sleep, grit his teeth, and moan. These symptoms increased until 2 A.M., when he had a convulsion with the head drawn well back, eyes rolled up and rotated to the left side. When I saw him a little after 2 A.M. his pupils were markedly dilated; opisthotonos was marked; toes and fingers were flexed with the thumb drawn into the palm of the hand, hand pronated; eyes rolled up and to the left; rapid respiration, and a sharp cry with each respiratory movement. In from one-half to one and a half minutes the muscular contraction would relax, but would immediately recur if his skin was touched. Movement of the bed clothing would bring on a convulsion. So markedly did the convulsions simulate strychnia poisoning that I closely questioned those in attendance if by any possible chance he could have taken strychnia. Believing the case to be one of cerebrospinal meningitis of an unusual type, I asked Dr. Adams to see the case with me at once. At his suggestion I tasted the powders, of which he had taken four. Thinking still that there might be some intestinal irritation exaggerating the condition, we gave one dram of sodium bicarbonate in one quart of warm water; then, twenty or thirty minutes later, gave $\frac{1}{8}$ gr. morphine sulphate hypodermically. In ten minutes this caused contraction of the pupils, with a lessening in severity of the muscular contractions. The moan continued with each respiration, though not so loud; also gritting of teeth. Pulse continued between 90 and 100. As he seemed more quiet, his temperature was not taken, but it did not seem to have changed perceptibly. About 4:30 A.M. respiration was slower, and when the convulsions occurred respiration would stop until he became completely cyanosed; the pulse had increased to 135, and was decidedly weaker. The contraction of the posterior muscles was less marked and the respiratory movement was weaker, and finally failed until started by artificial means. Dr. Adams was again hastily summoned. We gave $\frac{1}{200}$ gr. atropine and three hypodermics of whisky without appreciable effect. The convulsive movements finally were confined to the respiratory muscles, the voluntary muscles were apparently paralyzed, except that during convulsions

the posterior muscles of the neck would contract very slightly. These muscles were the last of the posterior muscles to lose their power of contraction. About 6 A.M. the pupils again became dilated. The convulsive seizures grew less and less until death occurred at 6:55 A.M., less than thirty-six hours after the first indication of any deviation from health and about ten hours after the onset of the first tangible cerebrospinal symptoms.

Upon further questioning the mother, I learned that in the latter part of March, 1907, she had an attack of gripe lasting seven days. Just as she recovered her three children were all taken down with the same malady. The two older children had temperatures from 103° to 105° , and recovered in four or five days. The youngest child (the one under discussion) was sick for only two days, his highest temperature being 102° , and from this time on seemed to have a slight nasal catarrh, but otherwise was perfectly well.

At 11:30 A.M., about four hours after death, Dr. W. W. Wilkinson, at my request, made a lumbar puncture, drawing off about 5 c.c. of pinkish-white fluid, slightly bloody, for bacteriological study. The report of his study is as follows:

"Bacteriological Examination of Cerebrospinal Fluid.—Lumbar puncture made at 11:30 A.M., May 13, 1907. About 5 c.c. of fluid obtained, no effort being made to drain the spinal canal entirely. The fluid was a pinkish-white color, quite cloudy, contained some small flakes of fibrin, and on standing settled to bottom of bottle as a thin white granular deposit.

"Cover slip preparations from the fluid were immediately made and stained with Wright's blood stain and an aqueous solution of methylene blue. Examination showed an enormous number of small organisms, the majority of them apparently diplococci, and others a small bacillus of variable length. Some of the coccus forms were long, as if two diplococci were joined end to end. This was particularly apparent in the Wright preparation, in which the organism was twice as large as in that stained with the methylene blue. The majority of the organisms were free. The smears show a moderate number of leukocytes, ten to twelve in some fields, and principally of the polynuclear variety with a few lymphocytes. Red cells present and rather numerous. The organism is seen in the leukocytes, some containing three or four, though this is the exception rather than the rule. The methylene blue stain shows a much smaller organism. Both smears show a faint capsule

around many of the organisms, which, however, is not demonstrated with Welch's stain. It is quite variable in its morphology: some show an interval in the centers too wide for a diplococcus, some stain homogeneously, some are slightly curved, and there is variation in length from 4 to 10 microns. There is no tendency to form chains or any special grouping. The appearance strongly suggested the pneumococcus, especially from the Wright stain, but it did not take the Gram stain and consequently was excluded.

"Cultures from the fluid were made on plain medium and human blood-agar. There was no development on the plain medium after forty-eight hours in the thermostat at 37° C. On the blood-agar plates there were numerous minute, pale grayish, translucent, discrete colonies. Under the low power these are not granular, are round, and about the size of a red blood cell and smaller. Smears from these colonies showed the same organism as found in the fluid, with the same staining reactions, and subcultures growing only on hemoglobin medium. Greater variation in morphology is observed, particularly in length. Some are crescent-shaped with thickened centers, these probably involution forms; others show the diplococcus-like morphology, which closer study and staining in different strengths of carbol-fuchsin shows to be selective polar staining, as the cell wall can be made out between the deeply stained areas. The apparent encapsulation noted in the original smears is not evident.

"On May 14 a guinea-pig and a white rat were inoculated intraperitoneally with five minims of the fluid. The guinea-pig died on May 18. Autopsy showed marked congestion of the meninges of the brain (principally at the base) and of the spinal cord. No noticeable lesions of the thoracic or abdominal viscera. Cultures on blood-agar from the meninges, lungs and heart's blood all showed an organism corresponding in all respects to the original, with a staphylococcus contamination in two of the tubes.

"The rat is alive and apparently healthy on May 24.

"Summing up the results of the cultural, staining, and morphological characteristics of the organisms, together with its pathogenicity for the guinea-pig, it would seem without doubt that we are dealing with an organism identical with, or closely related to the influenza bacillus."

815 CONNECTICUT AVENUE.

THE SCOPE OF TREATMENT OF ACUTE PELVIC INFECTIONS IN WOMEN BY THE GENERAL PHYSICIAN.*

BY

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Washington, D. C.

THE treatment of suppurative processes of the internal reproductive organs of women has been markedly simplified during the last few years. This has arisen from careful study of the bacteriological and hematological features of the subject, together with greater clinical experience and the wave of conservatism in gynecology that has spread over the world. All these have enabled us to differentiate between acute and chronic pelvic inflammatory processes. It has been ascertained that practically all acute infections of the Fallopian tubes and the ovaries are best treated by other than surgical procedures of a radical character. The conservative plan of Nature seemed to be recognized as of value. It was noted that when these structures were attacked by infectious agents in nearly all cases the invasion had occurred by extension from the vagina or uterine mucosa, or both. This is not the case with the tubercle bacillus, which enters the tube most frequently from the peritoneum or the blood supply. The colon bacillus, too, may enter the ovary or the tube by other routes. The streptococcus may also reach these organs by way of blood or lymphatic channels. No suppuration, however, results, *per se*, from the latter species of infection.

The conservative plan of Nature previously mentioned is one of isolation of the infected area and destruction of the offending bacteria. This process is not by any means always successful. Moreover, it was found that, though successful, the suffering victims were not cured—that the adherent and crippled appendages continued to annoy and produce chronic invalidism and other ills as sequelæ; that retroversion of the uterus and endometritis, ectopic gestation, the development of uterine fibroids and

*Read by invitation before the Eastern Pan Handle Medical Society of West Virginia, Berkeley Springs, July 10, 1907.

various other morbid conditions resulted and produced great physical and mental distress.

This plan is executed by means of agglutination of omentum and intestinal loops to the brim of the pelvis, the uterus, the broad ligaments, the bladder, and to each other, in such manner as to completely wall in the offending areas. This prevents the distinctly pelvic infection from spreading to the abdominal portion of the peritoneal cavity, though very frequently the vermiform appendix is involved in the inflammatory mischief and requires extirpation. Ofttimes it is found attached to the right Fallopian tube or right ovary, and its structures are invaded from the periphery toward the mucosa. Rarely the process is in the reverse order, the appendical infection causing an acute infection of the tube or ovary, or both.

The general plan of treatment of these acute pelvic infections is to keep the patient quiet and in bed; to apply ice bags or cold water coil over the hypogastrium, to maintain daily bowel movements by giving salines by mouth or by simple enemata of soap, or both; to make the diet soft or liquid and nonstimulating, and to wait a reasonable time for evidence of quiescence of the acute character of the infection. This is determined by four special features, which are (1) lessening or disappearance of pain, (2) disappearance of fever, (3) resumption of normal characteristics of the pulse, and (4) such general improvement as to lead the patient to believe she is getting well.

In a very high percentage of cases of these ailments thus treated the result will be much as suggested, though I would not pretend cure is thus secured, nor that further treatment of a radical and surgical character will not be required. In the streptococcic form of infection I seriously question a more extensive treatment, though if it be in puerperal cases in which the infection is present in the endometrium, local treatment would seem to be of value. If sapremia from material within the uterus complicates this form of infection, intrauterine treatment, such as careful dull curettage, or curettage with painting of the endometrium with tincture of iodine, as well as irrigation, would be indicated. The general physician must of necessity do much of this work. He should, however, not overlook the necessity of doing it as a surgical procedure. The vulva should be shaved and rendered as aseptic as possible, the vagina carefully cleaned, and the hands and all paraphernalia prepared with as much care as for a laparot-

omy. We cannot avoid the fact that we may seriously complicate the affection by the introduction of a different variety of infectious agent. If practicable, the patient should always be anesthetized. When the infection is in the broad ligaments and not in the endometrium, and is of a nonpyogenic order, then surely no treatment compares with the ice bag, nourishing food, and rest. The danger of septic embolism and increased virulence of the organism from surgical interference is very great. The use of the word interference, instead of intervention, in this connection is decidedly proper. It many times happens that the pelvic peritoneum is infected by a pyogenic microorganism, and a large accumulation of pus forms. This usually occurs from a few drops of pus of such character dropping from the fimbriated end of a Fallopian tube, or both. It may occur from penetration of the rectum or colon by the colon bacillus. It is far more frequently caused by extension from the tubes than from all other sources. In this condition no delay should precede an incision in the posterior fornix of the vagina, reaching well through into the abscess cavity. The wound thus made furnishes dependent drainage. Through the opening thus made I am accustomed to introduce a rubber drainage tube that is left *in situ* about one week. Many surgeons irrigate the abscess cavity with a solution of salt or some antiseptic. Others employ gauze to lightly pack the cavity, changing it every one to three days until the cavity is obliterated, and some employ both the irrigation and packing. To me both seem superfluous and uncomfortable to the patient. One can readily understand that harm can be produced by irrigating should the adhesion barrier be by chance rendered not water tight. The gauze, too, may be so placed as to prevent, instead of favoring, drainage. In making this incision the bowel should be carefully avoided. The rectum may easily be opened through error and a rectovaginal fistula thus be established. The sigmoid flexure or a loop of small intestine may also be adherent in the cul-de-sac and be accidentally opened by the scissors. This makes a fistula connecting with a higher portion of the intestinal tract, and consequently more dangerous. The incision, as I usually make it, is transverse and very close to the cervix uteri. It need not be made large by the cutting edges of the scissors, but a small primary opening may be enlarged by stretching. This is accomplished by introducing through the opening the closed blades of a long blunt-pointed scissors, after which the blades are spread like a divulsor

and withdrawn. The after-treatment includes daily antiseptic vaginal douches and withdrawal of the tube on the eighth day, the patient being then allowed to sit out of bed. In about half of the cases thus treated nothing subsequently seems necessary to symptomatic cure. In the other half some radical treatment is needed for cure or relief. And in this work the gynecological surgeon alone is excellently qualified. Rarely accumulation of pus in front of the uterine body and tubes will demand evacuation by abdominal incision before death of the pyogenic organisms present has occurred. In such cases I do not consider anyone not a skillful abdominal and pelvic surgeon fully competent to perform such operation. Surely the general physician is not competent, and must expect in nongonorrheal cases to lose his patient at each attempt to perform this operation.

Summary.—I would, then, suggest first that the treatment of acute pelvic infections is, as a rule, nonoperative, but one of palliation and expectancy; second, that practically analgesics other than the external application of ice are not needed, and are harmful; third, that if surgical intervention becomes necessary during such acute stage of pelvic infection it will be a simple procedure of vaginal incision and drainage, though extremely rarely will abdominal incision for this purpose be required; fourth, that a certain percentage of such infections result in symptomatic relief or cure by such palliative treatment. A very much larger proportion (the suppurative cases) will require operation, of which the vaginal incision and drainage, whether during the acute stage or later, will be sufficient as many times as it fails, and when it fails radical surgery will have to be employed; and, fifth, that very rarely indeed will radical abdominal operation be required during the acute stage of pelvic infection.

THE ROCHAMBEAU.

BLOOD PLATELETS DURING PREGNANCY, LABOR, THE PUERPERIUM AND MENSTRUATION, AND IN THE NEW BORN.*

BY

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NUMEROUS students have investigated the blood during pregnancy, labor, the puerperium and menstruation in relation to the changes in the physical and chemical properties of the plasma

(intercellular substance) and of its cellular bodies, and have devoted adequate attention to all questions which are connected with them. Density, alkalinity freezing point, the coagulative, the autotoxic and bactericidal powers, the hemolytic and hemoagglutinative properties, the auto- and iso-hemolytic qualities of the serum, the electrical resistance and conductivity, etc., have been thoroughly investigated, as well as the changes of red corpuscles which are connected with those of the amount of hemoglobin, and the numerical alterations of the white corpuscles, the so-called leukocytic formula.

No mention, however, is made of platelets, the third morphological element of blood, Bizzozzero's element, or at least only a word is said here and there about them. This negligence may be referred to the distrust in regard to the actual existence of platelets, as well differentiated elements, and to the confusion which prevails among careless students as to the nature, origin, and normal evolution of these cellular bodies. Italian students ought to consider themselves especially bound to the study of blood platelets by the names of Bizzozzero, who first discovered this normal morphological element of blood, and Vassale, by whose researches its origin and physiological rôle have been ascertained.

I will summarize in the following pages the results of numerous experiments during different periods of pregnancy, during parturition, menstruation, and the first twelve days after labor, and in the new born during the twelve days following birth.

The number of platelets is always greater than normal at any time of pregnancy, though it is subject to very noticeable variations. The platelets increase in number during the first month, and keep on increasing during the second and third until they reach a maximum average of 630,000 per c. mm. during the first fortnight of the fourth month. They diminish slowly and gradually during the fourth, the fifth, and the first half of the sixth month, when they reach the minimum average of 500,000 per c. mm. The number of platelets increases rapidly again during the seventh, eighth, and ninth months, when they reach, at term, the maximum average of 950,000 per c. mm. During the last moments of labor, immediately before the expulsion of the child, platelets are even more numerous, and they reach a maximum average of 1,500,000 per c. mm.

During the physiological crises of pregnancy (Bossi), corresponding exactly with the premenstrual time, an augmentation in

the number of platelets is evident, and this continues during the time which would correspond to the missing menstrual period. The increase is about 200,000 per c. mm., and is more or less conspicuous and rapid, and disappears more or less rapidly, according to the period of pregnancy. During the first months of pregnancy platelets are small or of medium size, round, or ovoid. They show a rather high agglutinative power and unite in groups of 12, 14, or 16; large and non-cohesive platelets are rare. As the term of pregnancy approaches, and platelets become more and more numerous, their bulk diminishes; they become round; large platelets disappear completely. Viscosity increases, and they group together into more and more numerous heaps, so that at term, during the last days, the last hours before labor, one finds groups of from thirty to forty small and very viscid platelets so conglutinated that it is impossible to separate them, even by long and energetic shaking of the fixing and staining solution in which they have been collected directly from the blood.

During the critical periods of pregnancy an increase in the number of platelets is noted, and their tendency to agglutination is constantly lessened. Those of large size are more numerous and some giant forms appear, whose characteristic property is a minimum amount of viscosity. This condition, which is clearly appreciable until the sixth and seventh months of pregnancy, is less evident during the last three months.

When parturition is over and the placenta is expelled the number of platelets diminishes rapidly, coming down to an average of 350,000 per c. mm. Sixteen, twenty, or twenty-two hours after delivery it is up again to 840,000 per c. mm. From the twenty-fourth hour all through the first and second days after delivery a new diminution is noticeable to a minimum of 560,000 per c. mm. On the third day, coincident with lactation, or even before its appearance, an increase of platelets is found, which continues during the fourth, and sometimes even the fifth day, and the maximum average which may be reached is 930,000 per c. mm. After this maximum has been attained, the number of blood platelets decreases more rapidly for two days, and afterwards more slowly for five or six days, until on the twelfth day of the puerperium it reaches an average of 670,000 per c. mm.

After parturition and delivery of the placenta the platelets diminish in number, and in the meantime their agglutinative power is evidently impaired. They are found to be still small and

round, but they agglutinate in groups of only ten to fifteen. A few hours after parturition their bulk increases gradually; they become of medium size, most of them ovoid; also large forms appear and sometimes giant forms. The last are more numerous during the second and third days of the puerperium; rarer on the fourth and fifth. During the following days of the puerperium upon which I carried on my examinations these forms are less numerous than before.

As platelets vary in their morphological characters they are found to change also in their grouping activity. Their power of cohesion, or conglomerative power, clearly diminishes because of a want of viscosity in each element. This fact is very clearly noticeable on the second and third days of the puerperium; it is less clear during the following nine days, when viscosity, however, does not reach the normal degree. In fact, even after the third day, the platelets, which are mostly of medium size and ovoid, unite in groups of four to six at most.

During the catamenial period the number of platelets increases; the fact is actually demonstrable all through the premenstrual time, and a maximum average of 470,000 per c. mm. is reached on the second to the third day of the menstrual flow. After the third day a gradual diminution is appreciable until, on the last day of the flow, a minimum average of 350,000 per c. mm. is attained. After the menstrual flow ceases a number of 450,000 is reached on the following three days, and then day by day platelets become less and less numerous until the normal number of about 300,000 per c. mm. is reached.

Platelets show in the meanwhile a lessened agglutinative power through lack of viscosity. This property is already diminished during the premenstrual time, and lessens still more as soon as the blood flow begins and as long as it lasts. After menstruation it gradually becomes normal again. In relation to these facts, we notice that the numerical increase of platelets is shown in the medium-sized ones which are ovoid; the small and round-shaped forms become less numerous; large platelets increase in number and giant ones appear. Groups formed through agglutination during this period consist of four to five elements.

Even in amenorrheal subjects platelets increase in number during the premenstrual time to a maximum which is reached in the first two days of the absent menstrual flow, and is followed by a gradual diminution day by day. The medium-sized platelets are

the most numerous, but large and some giant appear, and agglutinative power is diminished.

The blood crisis, its vital power, showed in the women examined an influence on the number and on the agglutinative property of platelets. It was evident that when blood crisis was weakened, the changes in the number, morphology, and agglutinative power of platelets were more conspicuous.

As a complement of these researches, and with the object of acquiring a still more complete knowledge of the nature, function, and morphology of platelets, I undertook a systematic examination of these elements during the first ten days of life of newborn children. Through the same technique I reached the following conclusions: There is a close relation between the number of platelets of the mother and those of the child. Soon after birth platelets are very numerous in the blood of the new-born (up to an average of 970,000 per c. mm.); they decrease during the first day of life (80,000 per c. mm.), and they then increase again on the second and third days, though they remain notably below their original number (300,000 per c. mm.). On the fourth day a new diminution takes place, 150,000 per c. mm., and subsequently an increase to 250,000 per c. mm. during the fifth, sixth, and seventh days. They gradually diminish on the three following days down to an average of 93,000 per c. mm.

Soon after birth platelets are numerous, small, round, and viscid, so that they unite in groups of fifteen to twenty. As their number decreases their bulk increases, so that medium-sized elements preponderate, and large and sometimes giant platelets can be found, especially from the fourth to the seventh day of life, inclusive. The viscosity of such elements is lessened as usual, and heaps of platelets are rare, small, and constituted of four to seven elements only.

The numerous observations and blood examinations which I have made have led me to elaborate some personal conclusions concerning certain ill-defined and not generally accepted views as to the nature, the function, and the importance of these mysterious blood elements, platelets.

There is no accord at the present time as to the number of platelets per c. mm. in the blood of adults under physiological conditions. Some fix the average at 250,000 per c. mm.; some believe it to be as large as 778,000. My own observations show that under normal conditions blood platelets number about 300,000 per c. mm.; in the child the number is 95,000.

Platelets originate from red blood corpuscles and represent a regressive physiological condition of those blood elements. Vassale was the first to give a brilliant experimental proof of that statement, and his work has been verified by my results. In fact, I have always observed that coincident with or soon after an increase in the number of platelets, a diminution of red corpuscles is evident. On the other hand, when hemopoietic organs, through increase of their activity, pour into the circulation a number of new-formed red corpuscles, platelets diminish in number for a time which varies in duration according to the causes which gave rise to the increase of red corpuscles.

The viscosity of platelets is an interesting property which appeared to vary inversely with their bulk and size in all my observations. It is conspicuous when platelets are very small and round; it lessens gradually as their size increases, and it attains a minimum under those conditions where there is a maximum number of large and giant platelets.

With this important quality, through which platelets agglutinate in greater or smaller masses according as they are more or less endowed with viscosity, is connected the question of blood coagulation. According to Bizzozzero's views and those of his school, coagulation of the blood under physiological conditions depends on platelets.

Now, the coagulative power of the blood, according to my observations, would appear to depend upon the size of the platelets much more than upon their increased number. It has been demonstrated by Raineri that throughout pregnancy the coagulative power of blood is increased. My researches show that during pregnancy the agglutinative qualities of platelets are heightened until they reach a maximum just a few moments before labor.

In physiological crises (Bossi), when the changes of ovulation take place in the ovary, the agglutinative property of platelets is lessened just as occurs in the non-pregnant woman at each menstrual period. Raineri, Birnbaum, and Osten have presented evidence of the lowered coagulative power of blood. The trustworthiness of my statement is heightened by the fact that the coagulative power is low in new-born children, while my researches show that their platelets possess but slight viscosity.

Platelets may be considered as a morphological index of the coagulative power of blood.

Carbone showed experimentally that the degree of coagu-

lative power of the blood corresponds to a greater or lesser resistance to infectious diseases, especially to diplococcic infection. Platelets, which are considered to be the fundamental origin of the coagulative property of blood on account of their viscosity, might also be taken into account as the representatives of the amount of energy which an organism may display in opposition to any bacterial infection or to a toxemia of any origin.

These views are in accordance with Raineri's experiments, by which it has been proved that the bactericidal and antitoxic powers of blood are increased during pregnancy, but are diminished during the puerperium and also in the premenstrual period and during the first day of the menstrual flow; also that it is lower in the new-born than in the adult.

Tschistovitch advanced the hypothesis that platelets may be active in the struggle of the organism against infection, being the carriers of certain defensive substances, namely antitoxins, agglutinins, stimulins, etc. Tschistovitch's hypothesis should be interpreted as follows if we consider the results of the researches, from which I conclude that the coagulative power of blood is dependent upon the agglutinative property of platelets, the degree of coagulative power of blood being an index of the resistance of the organisms to toxic agents. To my mind this hypothesis would be valuable if it were made to signify that platelets are active in the struggle of the organism against infection, because of their agglutinative property, which causes a greater or less degree of coagulative power in the blood.

Through their agglutinative power, platelets probably represent, to a certain degree, the energy by which the organism acts on endogenous and exogenous toxic substances which threaten its vital power.

ECTOPIC PREGNANCY.*

BY

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By the term ectopic pregnancy is meant a condition in which the fertilized ovum is prevented from reaching the uterine cavity and develops to a greater or less extent at the point of arrest.

*Read before the Washington Obstetrical and Gynecological Society, April 19, 1907.

Some operators say the frequency of uterine pregnancy is 5 per cent. of all their abdominal sections. That it is more frequent than was originally supposed, is proved by the large number of cases being reported in the journals at the present time. During my student days the great question seemed to be, how the fetus could be killed, hoping that a lithopedion would develop, as this was supposed to remain quiescent, or at least to come away, after years, through the vagina or rectum. If rupture of the sac containing the pregnancy took place the condition was considered fatal in most cases, either from shock or hemorrhage, or later from sepsis. The fertilized ovum which has been arrested at some place outside of the uterine cavity, may be disturbed in its process of growth and die, or it may continue its development in some position near the original implantation.

Nearly all of these gestations are primarily tubal but may become abdominal or broad-ligament pregnancies by rupture of the tube or by tubal abortion. That an ovum may become fertilized in a Graafian follicle and develop in the ovary is abundantly proved, but that a pregnancy can occur originally in the peritoneal cavity is not considered possible. Many pages have been written as to the causes of extrauterine pregnancy, but it is now generally conceded that the vast majority of cases occur because of some previous inflammatory condition of the tube. By this it is narrowed, patches of cilia are destroyed so that the ovum lacks the push from behind to enable it to reach the uterine cavity, or an angle or kink is formed around which the ovum can not pass, or adhesion of the mucous membrane occurs. Not all tubes, however, are found diseased, and some mal-development may then be said to be the cause. Pressure on the tube by a tumor might be a cause, or adhesive bands.

The pregnancy may occur in any part of the tube. It is termed interstitial, when in that part of the tube which penetrates the uterine wall; isthmie, when at or near the middle of the tube; ampullar, when near the outer end. Interstitial pregnancy is considered rare. Isthmic is more common and usually terminates by rupture of the tube. The ampullar is said to be the most common form and it may terminate in tubal abortion, the ovum being extruded into the peritoneal cavity. In the beginning the tube becomes hypertrophied and very vascular. The ovum continuing to grow, the tube becomes very thin and, weakened by the penetration of the villi, some time between the second and tenth weeks,

rupture or abortion occurs. The vessels supplying the growth have become very large and hemorrhage takes place. Sometimes it is slight, but at others so profuse that the patient dies before aid can be obtained.

Heinck, in *Surgery, Gynecology, and Obstetrics* for February, gives the following terminations of extrauterine pregnancy: "1. The pregnancy may go to term and a living child be delivered through a channel created by the surgeon. 2. The child may go to term, remain undelivered and die. 3. The fetus may die at term or previous to term. 4. Rupture of the gestation sac may take place before or after the death of the fetus." Operative delivery at term of a living child is very rare because of very many causes which affect the growth of life of the fetus. If the fetus dies the patient is still far from being out of danger, for the fetus may putrify or may become septic, causing serious illness, if not death, or it may undergo certain changes by which it is preserved in the woman's abdomen as a more or less permanent cyst. A lithopedion may form or the sac may become encysted with a connective tissue covering. This may eventually become necrotic and empty into some neighboring organ, as the bladder, uterus, vagina, or rectum, the fetal bones coming away at intervals. The fetus may become cartilaginous or become converted into a fatty mass.

Rupture may take place into the abdominal cavity or into the folds of the broad ligament. If all the blood supply, or nearly all, is cut off from the fetus, it loses its life, and if very small may be absorbed. If the fetus is of several months' gestation it will not be absorbed. After rupture or tubal abortion the fetus may continue to live, the blood supply being sufficient for its nourishment.

Diagnosis.—The diagnosis before rupture is seldom made, probably not because of any great difficulty, but because the patient has no reason to suspect anything wrong. Should a patient who is supposed to be pregnant have colicky pains, which simulate miscarriage, she should certainly be examined. If she is pregnant outside of the uterus, the examination will reveal a pear-shaped tumor whose size depends on the period of gestation at one side in Douglas's pouch, close to the uterus, very tender and pulsating. After rupture or abortion has taken place the diagnosis is easy, as the symptoms are well marked. If menstruation is delayed, and the patient has been having colicky pains, suspect extrauterine pregnancy. If there have been sudden acute pain, nausea,

vomiting, and collapse, one may feel quite sure of the diagnosis. The physical examination will usually clear up any doubt, but not always. Normal pregnancy, pyosalpinx, appendicitis and perforating ulcer of the stomach may be mistaken for ectopic pregnancy, but careful study of details will usually clear up any doubt. Examination shows tenderness over the lower abdomen, and at times the percussion note is flat from the presence of blood. If the rupture is very recent it is sometimes hard to detect the presence of blood in Douglas's pouch, but after it is clotted there is no trouble. A boggy tumor is felt, and sometimes the enlarged tube may be found. If the rupture takes place into the broad ligament the tumor is on one side, bulges down into the vagina, and is tense. The enlarged tube may be detected. The tube is more or less pear-shaped, and with care pulsation may be felt. As the gestation progresses the uterus is pushed to the opposite side, or forward if the mass has dropped into Douglas's pouch. Pressure symptoms are also present. Contractions of the gestation sac have been said to have been felt. Microscopic examination of the shreds will show absence of the chorionic villi.

The symptoms of rupture of the sac or abortion usually come on without any warning, but sometimes they are preceded for a few days by colicky pains. They may come on during some exertion or straining at stool. They are described as tearing pains, at times like labor pains. If the rupture is large and sudden there is a condition of collapse, with cold and clammy skin, the pulse feeble and rapid, and at times not palpable. The face is extremely pale from loss of blood. After a day or two the patient may react and appear better, when a recurrence of these symptoms takes place. These phenomena recur with each renewal of hemorrhage. Nausea and vomiting are frequent, and cases have been diagnosed acute indigestion.

If the rupture takes place, the quantity of blood poured out into the abdominal cavity is commensurate with the size and number of vessels ruptured by the tearing of the tube or separation of the villi. If the hemorrhage is large, the patient may lose her life at once from the hemorrhage, or this may continue and the patient die of loss of blood after some days. The tube may become plugged with the membrane and the hemorrhage be controlled, and a subsequent rupture may occur with more or less disastrous results. If much blood is lost, but not enough to cause the death of the patient, the blood becomes organized in the pelvis, or becomes infected.

The fetus may die without rupture of the tube. If this occurs, or if the tube is only slightly ruptured and the fetus dies, we have produced a hematosalpinx. The fetus is frequently not found in the early months, especially if there has elapsed some time before operation and the rupture is large enough for the fetus to have escaped into the peritoneal cavity, where it is absorbed. If the bleeding is not too excessive, a small tumor, hematocele, is formed in Douglas's sac, which, if it does not become infected, will be absorbed and the patient recover. If the rupture is into the broad ligament, the hemorrhage will probably stop sooner because the vessels are compressed by the blood being confined in a limited space. This blood clot is called a hematoma, in contradistinction to the hematocele.

If the pregnancy goes on to term, which it rarely does, and if laparotomy is done while the child is still living, it will probably die during the first few days of extrauterine life. The child is frequently deformed.

Symptoms.—The subjective symptoms are those of early pregnancy. Amenorrhea may not be present. There are expulsion of the decidua vera and pains in the lower abdominal and vaginal regions. There is a history of previous sterility in some cases. Not all cases have the early symptoms of pregnancy, for there are cases where the first symptom is that of the acute pain of the rupture. Again the menstruation may continue until two or three periods have passed, though it may be shortened and the flow may be less. The pains are bearing down in character, or expulsive, the decidua begins to come away either as a whole or usually in pieces. The hemorrhage from the uterus may be so great that the patient may think she is having a miscarriage. The pains are probably due to the tubal and uterine contractions, and usually come on towards the end of the second month, but may occur sooner. They recur from time to time at irregular intervals. The objective symptoms are also those of early pregnancy, such as changes in the vagina and breasts, softening of the cervix, and enlargement of the uterus.

Treatment.—So eminent an authority as Bache Emmet, who wrote the chapter on gynecological therapeutics in clinical gynecology (Keating & Coe), 1895, says: "Two different views are held as to its (ectopic pregnancy) treatment, and the advocates of each support their position by numerous facts." And, further, he says: "I have, therefore, no hesitation whatever in saying to physicians

so situated (in small towns) that I think they are eminently justified in using their batteries." Then follows the technique of using the battery. Further, he cites a case so treated as follows: "In one case which I treated with the galvanic current for the purpose of destroying the fetus, I caused its expulsion into the uterine cavity; the galvanic current (fifty milliamperes) caused the sac to rupture; the fetus was expelled twenty-four hours later *per vias naturales*, and the rest of the product of conception in another forty-eight hours." He thought this pregnancy came from the outer third of the tube. He says Lawson Tait did not believe him.

One has only to look over a little of the literature on this subject to see how much has been changed since Dr. Emmet wrote as quoted above. It may be said to-day, with no expectation of contradiction, that the only treatment to advocate is operation, and this just as soon as the diagnosis can be made. If the diagnosis can be made before rupture, operation should be done immediately, for the life of the child is not to be considered. The patient is in grave danger of rupture, which may cause her death before operation can be done. If rupture has taken place, operate immediately, for she may bleed to death at any time, or if the hemorrhage has stopped operate immediately, for it may begin again. One of the cases which I shall report herewith was thought to be dying. Her physician thought nothing could be done, but we procured an ambulance immediately, and she was on the operating table at the hospital just thirty minutes after I first saw her. The diagnosis was evident after hearing the history and seeing the patient.

The operation should always be done through the abdomen unless the rupture is through the broad ligament, when it may be done through the vagina. After opening the abdomen see first if bleeding still persists. If so, clamp the bleeding tube near the cornu and the ovarian artery in the broad ligament just beyond the fimbriæ. This can be done quickly, and then the remainder of the operation can be done without fear of losing more blood. The tube should be removed. If the ovary is normal it may be left. The clots are turned out and the abdomen is cleansed with salt solution. If much blood has been lost, and the patient is very weak, it is not necessary to remove all clots, as many smaller ones will be absorbed and valuable time is lost in hunting for them. Salt solution to the quantity of several quarts is left in the abdominal cavity.

Operation at, or near term, presents in some cases grave difficulty because of liability to hemorrhage due to separation of the placenta. If possible, the whole sac should be removed, but sometimes this is impossible, and the sac may be stitched to the abdominal wall and drained.

It will be seen that two of my twenty-one cases were operated on twice for ectopic pregnancy. Dr. I. S. Stone operated on Mrs. F. three years before she again had ectopic gestation. The other, Mrs. K., was operated on by me both times—the second just one year after the first. In eleven cases the right tube was the site of the gestation, and in nine the left. The vermiform appendix was found inflamed in three cases and was removed. Not all the patients, however, were examined as to this condition, for obvious reasons. Twelve had had children. Six had had miscarriages. Two had had both miscarriages and live-born children. Four gave history of never having been pregnant, but one single woman had a slight laceration of the cervix, which probably puts her in another class. One of these four had had gonorrhea, and the other two gave history of menstrual difficulty. Only three were previously sterile. One patient had a still birth and a miscarriage; the latter was not induced. Three patients were not married. There was one death in the twenty cases, from sepsis.

CASE I.—Mrs. B. Referred by Dr. Mackall. White, aged 35. Operation, June, 1899, at Georgetown Hospital. One child, no miscarriages. Had missed her period for six weeks. Had a slight pain, slight bleeding from uterus; passed membrane, and thought she was having a miscarriage. After two weeks had very violent pain in abdomen and collapse. Removed immediately to the hospital and abdomen opened. About four pints of fresh blood removed. Left tube ruptured about the middle. Six weeks' fetus found. The left tube and ovary were removed. Patient received salt solution in breast, which caused an abscess; otherwise recovery uninterrupted.

CASE II.—Ida G. Referred by Dr. James Stuart. Colored, aged 29. Operation, August 15, 1901, at Sibley Hospital. Had been bleeding for three weeks, and after seventeen days passed a cast of the uterus. Patient not intelligent, so could not get definite history of sudden pain, but she complained of constant pain in pelvis. Examination showed tenderness over whole lower abdomen. Uterus large and whole anterior pelvis filled with a tense mass, which reached above the pelvic brim. A large mass of very dark blood, roofed over, and to which intestines, omentum and bladder were adherent, was found encapsulating the uterus. This was broken into and the blood dug out in large clots. The left tube was ruptured about the middle. Under this was a broad-

ligament cyst as large as a small cocoanut. The right tube was a hydrosalpinx. Both tubes were removed and the cyst enucleated. Patient died of sepsis after three days.

CASE III.—Mrs. Mary B. Referred by Dr. Hunt of Maryland. White, aged 35. Operation, November 13, 1903, at Sibley Hospital. She had had four children, the last six years before. Had missed her sickness for three months, when she had a violent pain in the abdomen with vomiting. Bleeding from the uterus began immediately in large quantities. A physician from Baltimore was called, who curetted her. The hemorrhage and pain continuing, she came to this city. The abdomen was distended and very painful over the lower part. Uterus enlarged; boggy mass in pelvis. On opening abdomen large clots poured out; about four pints were removed, the fetus coming out with the clots. It was of about three months' gestation. The right tube was ruptured nearer the uterus, and contained the secundines. The left ovary was a small cyst, and was removed, with the right tube. Wound healed by first intention.

CASE IV.—Mrs. F. Referred by Dr. Kelly. White, aged 35. Operation, December, 1903, at Georgetown Hospital. Three children, the last eight years ago. No miscarriages. Had been operated on for ectopic pregnancy three years previous, and left tube was removed. Had missed period for six weeks. Endeavored to bring on an abortion. Flow slight, with very severe pain; pulse rate slightly increased. Uterus enlarged. No mass felt in pelvis. Discharged blood had foul odor. Patient anesthetized and curetted. Bleeding and pain continued. After four days a small mass was found on right. Abdomen opened next day and about a half pint of red blood and a few dark clots removed. No fetus found. The right tube contained membranes at fimbriated extremity. Recovery uninterrupted.

CASE V.—Mrs. K. Referred by Dr. Mackall. White, aged 26. Operated, June, 1904, at Georgetown Hospital. No children; several induced miscarriages. Had missed her period for six weeks. Pains in pelvis began with show of blood. Pain continued at intervals. Uterus slightly enlarged, small mass on left. Abdominal operation revealed about a pint of free blood, some dark and some bright, showing that the bleeding was continuing; membranes were protruding from left tube, which was still bleeding. The left tube and ovary were removed. Recovery uninterrupted.

CASE VI.—Mrs. B. Referred by Dr. Kurtz. White, aged 35. Operation, August, 1904, at Georgetown Hospital. Five children; no miscarriages. Patient had had a very difficult labor one year previous. Menstruation was overdue two days. Had severe pain in abdomen in the morning; at 3 P.M. of same day had a very severe pain and collapsed. Pulse, 140. Uterus large, boggy mass in cul-de-sac. Abdominal operation; blood poured out when peritoneum was incised. About four pints of red clots removed, with four weeks' fetus. Right tube ruptured near distal end.

Right tube, ovary, and appendix were removed. Recovery uninterrupted.

CASE VII.—Mrs. B. B. Referred by Dr. Muncaster. Colored, aged 30. Operation, April 1, 1905, at Columbia Hospital. Two children. Last menstruation ten months ago. Patient thought herself pregnant, and was in readiness when the proper time arrived. In just 280 days after her last menstrual flow she was taken with very severe pains and collapse. She continued to have pain which simulated labor pains for forty-eight hours, when the pains ceased, though the abdomen continued very sore. The patient remained in bed for a week. She then went about her duties, but suffered pain all the while. Three weeks after the first attack of pain she sent for her physician, who found the uterus smaller than it was two weeks before. On examination a tumor about as large as a seven-months' pregnancy occupied the abdomen. It was irregular in outline and lay more towards the right. The fetal hips could be palpated on the left directly under the abdominal wall. She entered the hospital and was operated on the next day. On opening the abdomen the sac was found ruptured and the buttocks of the fetus protruded. The sac wall was adherent to intestines, omentum and uterus. After separating the adhesions, it was found that the placenta was attached inside the sac and that the whole mass could be removed by ligating a pedicle no larger than an inch in diameter. There was no blood in the abdomen, the sac having ruptured at a point farthest removed from the placenta. All the liquor amnii had been absorbed. There had been no rise of temperature at any time. No drainage was used. The fetus was a female, well developed, weighing one and a half pounds. Recovery was uninterrupted.

CASE VIII.—Mrs. K. Referred by Dr. Mackall. White, aged 27. Operation, May, 1905, at Georgetown Hospital. No children; several induced miscarriages. Had been operated upon one year previous for ectopic pregnancy of the left tube, which, with its ovary, was removed. Patient had menstruated regularly since the operation, but had gone over one period three weeks. Colicky pains began in abdomen and recurred at intervals for seven days, when the pain was sharp, and she vomited, and felt as if she would faint. Uterine hemorrhage then appeared. The uterus was slightly enlarged. A small mass was found on right. There was in the abdomen about a pint of blood; no fetus was found. The right tube had aborted; the ovum and the membranes still protruded from the ostium. The tube was removed. Recovery was uninterrupted.

CASE IX.—Mrs. Daisy H. Referred by Dr. John Stewart. White, aged 25. Operation, June 7, 1905, at Sibley Hospital. Two children, last eight years ago; no miscarriages. Had missed her period two months. Was taking pennyroyal and turpentine; began to have slight flow, which continued for a week. Then seized with violent pain and became unconscious. Husband put

her to bed, and after ten days she got up, and again the pain returned and she was unconscious. She was again put to bed and a physician was sent for. He found her pulse 180 and temperature 95° . Patient very weak and pale, gasping for breath, no pulse perceptible at wrist. Complaining of great pain in abdomen. Abdomen distended and very tender. Slight bleeding from uterus. Uterus large, cervix soft. Boggy mass occupied left pelvis, very tender. She was rushed to the hospital in an ambulance. On opening the abdomen a large quantity of bright red blood escaped. The left tube, which was surrounded by dark clots, was still bleeding. It was clamped and the remaining clots were washed with salt solution. The left tube and ovary were removed. The abdomen was filled with salt solution and closed. Union by first intention. Left hospital in three weeks.

CASE X.—Mrs. Hannah F. Referred by Dr. U. D. Nourse of Maryland. Colored, aged 25. Operation, July 4, 1905, at Sibley Hospital. No children; no miscarriages. History of gonorrhea three years previous. Missed period for three months. Had been bleeding from the uterus for a month. Dr. Nourse saw her and made the diagnosis of ectopic pregnancy. Temperature was running 103° F. in the evening; pulse, 140; abdomen very tender and distended with gas. Uterus enlarged and fixed, very tender, boggy mass filling the pelvis; bloody, purulent discharge from the uterus. The pelvis contained dark blood and pus. The fetus was decomposed and of about three months' gestation. The right tube was ruptured about the middle. The uterus with the right tube and ovary were removed; vaginal drainage. Union was by first intention, and recovery uninterrupted.

CASE XI.—Mrs. Carrie F. Referred by Dr. Suddarth. White, aged 30. Operation July 22, 1905, at Sibley Hospital. Four children; several miscarriages. Had missed her period two months. She then introduced into the uterus a wire which had been fitted into a screw-driver handle. After several attempts, the flow started, with very violent pains. I saw her after three weeks. Her temperature was then 102° in the evening; pulse, 130. The uterus was retroverted, a large mass on the left side. The abdomen was opened. About a pint of blood was walled off on the left, in which was a fetus of about six weeks' gestation. From the fimbriated end of the tube protruded the membranes. (Tubal abortion.) The left tube and ovary were removed. Wound healed by first intention. Recovery.

CASE XII.—Mrs. R. C. B. Referred by Dr. Mackall. White, aged 32. Operation, October, 1905, at Georgetown Hospital. Had worked at an occupation which required her to stand. Had had menstrual difficulty since she began to work. No children; no miscarriages. Missed her sickness six weeks. Had cramp for two weeks and a slight show. Uterus posterior. Small mass on right, very tender. About a pint of free blood in abdomen. Right tube ruptured about the middle. No fetus found. Right tube and ovary removed. Recovery uninterrupted. Patient had a living child two years after.

CASE XIII.—Mrs. S. Referred by Dr. Kelly. White, aged 30. Operation, November 12, 1905. Five children; no miscarriages. Last pregnancy terminated one year ago with twins. Has not been well since. Did not menstruate after labor. One month ago was taken with very severe pelvic pain and some bleeding from the uterus. The bleeding continuing, her physician curetted her, but she got no relief. She then went to a hospital, and a diagnosis of retroversion of the uterus was made. She left the hospital without operation, and I saw her after a week, the pain and uterine hemorrhage continuing. I found the abdomen tender in the suprapubic region and a tumor on the left reaching just above the pelvis. The uterus was pushed up against the pubes, and a tumor the size of a large cocoanut was behind and to the left of the uterus. Dr. Bovée saw her with me, and made a diagnosis of ectopic pregnancy. She refused operation. I examined her after six months and found the tumor had disappeared, except for a slight thickening.

CASE XIV.—Rebecca G. Referred by Dr. Rossiter. Colored, aged 27. Operation, February 22, 1906, at Sibley Hospital. Married; two children. First child was born two years after marriage and the next, six years after the first. She began to menstruate six weeks after labor and continued regular for twenty-one months. While walking on the street she was taken with very sharp pains like labor pains, and she found that she was unwell. These pains continued for seven hours and did not return for two weeks. Pain again set in and continued for three weeks. These last began like labor pains, but later the pain was continuous. She was then running a temperature of 102° . The abdomen was large and occupied by a tumor reaching to the umbilicus. The pelvic examination showed a boggy tumor occupying the position of and continuous with the uterus. The abdomen was opened and the tumor found to be a large blood mass, very dark and very tough, adherent to intestines, omentum, and entirely encapsulating the uterus. In Douglas's sac the mass was broken down and grayish in appearance. The uterus seemed to be infected, and was removed with the left tube and ovary. The tube was so torn that it was impossible to tell just where the original rupture occurred. The pelvis was drained through the vagina. The recovery was uninterrupted.

CASE XV.—Miss Grace H. White, aged 21. Operation, April 23, 1906, at Sibley Hospital. Three miscarriages. A pus tube had been removed by me one year before, when the uterus was found to be bicornuate. She had missed her period for two weeks. Had severe pains in the abdomen and rapid pulse. I saw her after two weeks. Uterus anterior, small mass on right side. Abdomen opened and pelvis filled with dark, clotted blood, especially on the right. The tube was ruptured near the distal end. The vermiform appendix was caught in the clotted mass of blood and was inflamed. The right tube and ovary with the vermiform appendix were removed. Recovery uninterrupted.

CASE XVI.—Mrs. J. Referred by Dr. D. O. Leech. White, aged 34. Operation, May 26, 1906, at Sibley Hospital. Two children; no miscarriages. Had been having some trouble with her pelvis for several months. Missed her period for six weeks. May 22 had sudden pain in pelvis and vomiting. The pain continued and the patient felt very weak. Examination; abdomen slightly distended; uterus posterior; large mass to right. Large quantity of blood escaped on opening the abdomen. About two pints of clots removed. Tube ruptured near distal end. No fetus found. The vermiform appendix was covered with the blood clots and inflamed. The right tube, ovary, and vermiform appendix were removed. Patient made an uninterrupted recovery.

CASE XVII.—Mrs. D. Referred by Dr. H. L. C. Johnson. White, aged 25. Operation, August 17, 1906, at Providence Hospital. Patient had always menstruated regularly. One miscarriage four years ago. She had missed her period for two months, when she had a sharp, sudden pain in the abdomen, and the flow began. The pain continued with more or less severity for two weeks, the flow continuing. She came to my office, saying she wanted to be curetted. The abdomen was moderately tender in the suprapubic region. The uterus was large and soft, a boggy mass occupying the pelvis. The abdomen was opened and fresh blood poured out, about two quarts. A fetus of about two months' gestation also appeared. The pregnancy had occupied the distal end of the left tube and tubal abortion had taken place. The left tube was removed. Recovery was uninterrupted.

CASE XVIII.—Mrs. Mary A. Referred by Dr. Acker. White, aged 32. Operation, September 25, 1906, at Columbia Hospital. No children; no miscarriages. Menstruation regular until one month ago, when she missed one period. Patient complained of pain in right inguinal region. This had continued for one month at intervals. The morning of the 25th, after menstruating for a month, she was taken with very severe pains, for which large doses of belladonna and morphine were given. Uterus enlarged; large mass, size of lemon, on right; very tender and tense. About half a pint of blood in pelvis. The tube was distended with membranes and blood clot to size of a sausage. The ostium was widely dilated, but plugged with blood and membrane. The right tube and ovary were removed. The recovery was uninterrupted. Patient left the hospital after two weeks.

CASE XIX.—Miss U. Referred by Dr. Atkinson. White, aged 29. Operation, February 12, 1907, at Sibley Hospital. No children; no history of miscarriage. Had missed her flow for several days. Was taken with sudden pain, collapse, and vomiting at 3 P.M.; no pulse perceptible at wrist. Stimulant administered by physician called in emergency. Dr. Atkinson saw her during evening and put on ice bag. I saw her at 8 the next morning. Patient very pale; pulse, 140; very tender over whole abdomen. Uterus slightly enlarged; no mass discernible in pelvis. Abdomen opened and about three pints of fresh blood removed. The left

tube, which was still bleeding, was removed, and found ruptured about one inch from cornu. A very small fetus was found in the blood clots. Recovery uninterrupted.

CASE XX.—Mrs. Ella B. Referred by Dr. Chin. White, aged 28. Operation, February 23, 1907, at Sibley Hospital. Three children, the last in January, 1906; two miscarriages. Did not get up well after last child. Menstruated last on January 4, 1907. Had a severe pain in lower abdomen, February 10. Began to bleed from the uterus after two days; this continued. Pain in pelvis was constant, with occasional sharp attacks. Examination showed abdomen tender over appendix and above pubes. Uterus retroverted. Small mass on right of uterus. About a pint of blood was found in the abdomen. The right tube was ruptured about $\frac{1}{4}$ -inch from cornu. The vermiform appendix was very much inflamed. The right tube and the appendix were removed. Recovery uninterrupted.

CASE XXI.—Mrs. L. Referred by Dr. Holden. White, aged 26. Operation, February 26, 1907, at Providence Hospital. One still birth and one miscarriage, September, 1906, at three and a half months. Last menstruation, January, 1907, scant. February 3, had severe pain in abdomen and vomited; February 11, had a slight show; February 17, violent pain in abdomen and vomiting, flow continuing; February 26, very violent pain in abdomen and partial collapse. Abdomen was distended and very tender. Uterus posterior, large, boggy mass in cul-de-sac. Pulse, 140. Abdomen opened and blood gushed out. Some clots were dark, but the most were bright red. The bleeding was continuing from the left tube. This was clamped and removed. A two-months' fetus was found. The blood was washed out with salt solution and the abdomen filled and closed.

HEART COMPLICATIONS OF SCARLET FEVER.*

BY

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IN reviewing the literature of the Heart Complications of Scarlet Fever, I am convinced that the heart has not received the attention which an organ so important, and, in my judgment, so frequently involved, should receive. One cannot but notice the extensive study that has been devoted to the Kidney of Scarlet Fever and the meager attention that has been given this important organ of which I speak. While there may be those who will

*Read before North Branch Chicago Medical Society.

not agree with me on what I have to say on the subject, I am sure that a careful future study will reveal many a hidden fact.

Wm. Hunter, in a clinical lecture on complications of scarlet fever (*British Medical Journal*, 1906, vol. 421), in his group of 150 cases gives

Adenitis	19 per cent.
Actual Nephritis	2.8 " "
Otitis	6.4 " "
Rheumatism	4.3 " "

and many other complications in small percentages, but does not give any report on the various heart lesions; the important emphasis being directed to "Oral Sepsis," and its relation to other complications.

L. Fischer, in a paper entitled "Clinical Observations with Special Reference to the Heart and Other Complications" (*New York and Philadelphia Medical Journal*, Vol. 80, page 1160), says: "More attention should be directed to the heart as manifested by the pulse, and less to the temperature as a guide to a prognosis."

He reports a very interesting case to bear out his statement, which I have considered worthy of quotation:

"E. K.—female, age five years; vomiting followed by the eruption of scarlet fever, covering the entire body, the rash being distinct for three days. The child was up during the second week and was given a liberal diet. On the twelfth day she had a sinking spell and evidence of heart weakness was noted. She was seen on the twenty-first day of the disease by Dr. Fischer, who found a marked decrease in the amount of urine, edema, and the characteristic appearance of acute nephritis; the temperature was 100°, heart sounds muffled, pulse slow and irregular. Myocarditis was determined."

J. F. Luhan (*American Medical Journal*, September, 1906) reports 129 cases without a death or severe complication. F. McEwen (*Pediatrics*, 1905, Vol. XVII, page 343) says: "Endocarditis does not seem to be common; however, it is insidious in its onset and easily overlooked."

Anne Sturges Daniel (*Jour. Amer. Med. Assn.*, 1900, Vol. 34, page 536) reports 450 cases: Three hundred and four mild cases all made complete recovery, except three, which were left with permanent endocarditis. The heart was carefully examined at frequent intervals during the first five days only. Sixty-six

cases presented an endocardial murmur, disappearing entirely in sixty-three. Six cases presented persistent irregular heart action. A number of cases with dyspnea and sudden death were attributed to edema of the lungs. Endocarditis without other complications was present in two cases. Endocarditis and nephritis in three cases, the endocarditis appearing first. Endocarditis and chorea in one case, the former appearing three days before the chorea.

Hatfield (*American Text*) says: "Cardiac dilatation, endocarditis and pericarditis should be guarded against in scarlatinal nephritis." Alfred R. Spencer (*Lancet*, 1905) reports a case of endocarditis with pericarditis treated with antistreptococcic serum, with recovery; also a case of acute pericarditis coming on early in the acute stage, being rapidly fatal, the blood showing a pure culture of the streptococcus.

Silbermann quotes the following (*Jahrbuch Kinderheilkunde*, Vol. XVII, 1881-1882): "Bamberger, in 67 cases of acute scarlatinal nephritis found fifteen cases of enlargement of the heart and four of dilatation."

Friedlander found by anatomical examination in a great many cases of scarlatinal nephritis, that the heart was hypertrophied in nearly all cases and combined with dilatation in many, being most marked in the left ventricle. In these cases the increased weight of the heart averaged 40 per cent. He found the hypertrophy to be due to three causes—

- 1st—Changes in the capillaries of the kidneys.
- 2nd—Impairment of the function of excretion.
- 3rd—Retention of urinary salts.

Gerhardt and Beneke found that the heart at birth is relatively greater and decreases up to the third year, when it reaches the minimum. Between the third and seventh years it again becomes relatively larger and it is not infrequent to find the apex beat outside of the mammary line—a point to be remembered in examination.

Goodhard reports five cases of acute dilatation with four deaths, the diagnosis being confirmed by postmortem.

In two hundred and twenty-five deaths during the recent epidemic in this city I found one hundred and thirty various complications, forty of which were diphtheria.

When it came to affections of the heart, *simple endocarditis was reported but three times, ulcerative endocarditis once, acute*

dilatation three times, dilatation and hypertrophy once, and under the heading of heart complications, three.

These facts in themselves are sufficient to convince the most skeptical that heart complications are not observed in a large percentage of cases. If so, what was the real cause of death in these cases? Which vital center gave way to the toxemia of this disease?

We know that myocarditis is especially to be dreaded in diphtheria, and I also maintain in scarlet fever (streptococci); yet diphtheria was given as complicating forty of these cases, and myocarditis was not mentioned in any of them.

What are the productive factors of heart complications? The two important factors mentioned by many of our best authors are the toxemia of the pyrexial stage and the late toxemia of nephritis; to these, however, I wish to add several additional factors which seem worthy of mention:

1. *Exertion*, which may be manifested in many ways. It is not at all uncommon for light cases to be overlooked, and being constantly on one's feet is a strain that many hearts cannot withstand. There are other cases of a severe nature that remain up and around for a short time only, as one I report, *i.e.*, a young man walked into my office with the disease well marked, and when questioned said he had noticed the rash for two days, during which time he had been working.

2. *Omiting*, when persistent, may be an important factor; it was present for six days in one of my cases, and I think was productive of dilatation.

3. *Toxemia of Complications*. We have but to give scarlet fever a thought to appreciate the fact that it is a septic disease throughout, and it would seem that the toxins arising from the various complications and especially from oral sepsis are very important in the production of heart complications.

4. *Rapidly Developed Anemia* which materially interferes with the nutrition of the heart muscle.

5. *Action of Toxins* upon the cardiac nerve supply.

Harley, in his observations was struck by the frequency with which he found fibrinous clots in the heart and great vessels during the pyrexial stage. This, he states, is the most common cause of death during the early part of the disease, and is indicated during life by the sudden reduction of a full pulse of about 120 to a running pulse of a much higher rate, of imperceptible

character, and usually attended with orthopnea and delirium, due to the obstruction of the pulmonary and cerebral circulations. On opening the body immediately in these cases, and while the warm blood was still fluid, the right heart was found distended with fluid blood and a bifid clot extended into the great vessels.

In thirty-nine cases of endocarditis and pericarditis reported by West, six were due to scarlatina.

The profession seems to be of the opinion that nephritis is the great factor to be dreaded in the production of heart complications.

Is it not an indisputable fact that the heart is an important factor in the production of nephritis? I maintain that in heart complications, and especially in myocarditis, where the tension is extremely low, we may have a passive congestion, with all the symptoms of a nephritis which may, with the aid of the toxins of the disease, induce an acute nephritis, which in turn aggravates the heart condition. This is well illustrated in the case reported by Fischer.

In what ways are the various heart conditions manifested?

There may be no indication of the impending danger in these cases: acute dilatation is no doubt the cause of sudden death, and is the *true factor*, instead of edema of the lungs, so frequently mentioned.

However, in most cases that are carefully and frequently examined, some or many of the following symptoms will be noted:

(b) Extreme sudden pallor of the face and extremities and at times cyanosis, especially around the mouth and tips of the fingers.

There may be precordial pain, although the pain may be referred to the ensiform cartilage or upper part of the abdomen.

One symptom I consider extremely important, and no doubt the one that causes a failure in diagnosis of many cases, is the sudden change from a rather strong, full, quite regular pulse to one of irregular rhythm and variable or almost imperceptible tension.

A rise in temperature is an important symptom in endocarditis and pericarditis, but is not usually seen in myocarditis, unless the myocarditis be of a septic nature or some other complication be present.

Murmurs are frequently found; are usually systolic in time, of a soft, blowing character, and heard most distinctly at the apex; however, it is not uncommon to hear them over the entire chest, and completely obliterating the first sound.

In myocarditis the first sound may be shortened and the second sound weakened. In endocarditis we usually find the second sound accentuated unless myocarditis is present as well.

True murmurs are due to two causes—either endocarditis or dilatation resulting from myocarditis.

Restlessness and anxiety are often present, especially in nervous individuals.

The apex beat may be displaced, diffuse, indistinct or entirely absent.

There may be an increase in the cardiac dullness, which is due to dilatation, pericarditis with effusion, or hypertrophy.

One may feel assured that myocarditis is present if the pulse is of a weak running character, irregular in rhythm and quality; if the heart tones are muffled, the apex beat diffuse and indistinct, and cyanosis or extreme pallor occur.

Tachycardia with irregularity, variable tension, slight temperature and a soft blowing murmur heard at the apex are pathognomonic of simple endocarditis.

Should the temperature be irregular, and a leukocytosis be present, unless explained by other conditions, we may be sure that the endocarditis is ulcerative.

A weak running pulse, increased cardiac dullness, diffuse indistinct apex beat, and a systolic murmur are indicative of myocarditis with dilatation.

Pericarditis should be suspected when we have an increased triangular area of cardiac dullness, muffled and distant heart tones, an apex beat which is diffuse, indistinct or absent, precordial pain, and should we be able to elicit a friction fremitus synchronous with the heart tones, the findings are pathognomonic.

Acute dilatation is much more frequent in adults than in children, and is explained by the fact that in children we have a more running pulse with a lower tension, which gives the heart a better opportunity for hypertrophy.

Before entering into the consideration of prevention and treatment, I wish to present the following cases:

No. 1.—R. C., male, age 16. Has always been in perfect health. Was seen January 19, with severe vomiting. Temperature 104.6°. Pulse 135. Marked angina. Heavy scarlet rash covering the entire body, which remained visible for three weeks. The temperature and pulse continued rather high for four days, after which it fell rapidly to normal, with no high for four days, after which it fell rapidly to normal, with no secondary rise. The vomiting was persistent for six days. Until January

25 the pulse had been quite good. January 26 it dropped to 48, became irregular, variable tension. Examination showed weak diffuse apex beat, increased dullness, systolic murmur at the apex and at times cyanosis of the lips and fingers. It is evident that myocarditis with dilatation was present. From January 27 to February 3 the pulse rate was from 40-60, remaining in the 40s most of the time. February 4, pulse 38; patient cyanotic and evidence of collapse. February 5-16, no great change was noted, the pulse still remaining exceedingly slow and at times very irregular. By February 21 the murmur had disappeared and pulse rate was nearly normal. The patient sat up ten minutes on the 21st, the pulse rising to 84. February 22, sat up fifteen minutes, pulse varying from 52-91. On 23d, sat up again fifteen minutes, pulse rising to 93, the murmur reappearing. It was evident that the heart was unable to withstand the additional strain. The patient was again kept in bed for eight days; the murmur rapidly disappeared, and beginning on March 3 he was allowed to sit up a few minutes at short intervals without any material effect upon the pulse rate and nothing further of importance was noticed.

No. 2.—L. McD., female, age 6. Always well until last June, when she had a mild attack of mumps. Last October she had diphtheria, at which time a myocarditis developed. On February 8 she did not seem well, but was playful. February 10 I saw her and found temperature 103°, pulse 120, good quality, angina, and the rash of scarlet fever well out, which remained distinct for three days. The temperature gradually lowered and the angina cleared up rapidly. Nothing unusual was noted for about a week, when extreme pallor at times was seen. On examination the apex beat was indistinct and weak. No temperature. Pulse slightly increased and quite irregular. A few days later she began to show some temperature and a soft blowing systolic murmur heard at the apex. A diagnosis of myocarditis and endocarditis was made, the symptoms gradually increasing in severity. On the 19th, 20th and 21st day of the disease the pulse became very irregular and ranged from 70 to 100. On the 22d, temperature 100, pulse 116, very irregular, and tension quite variable. The systolic murmur was marked and heard over the entire chest, and a diastolic murmur of extremely high pitch was heard in the aortic region. Blood count showed: Reds, 4,050,000; whites, 6,800. This condition persisted until the 27th day. From 27th to 30th day a decided improvement was noted. Again on the 31st day the pulse became very irregular and increased, murmurs becoming more distinct for two days. A few days later another relapse occurred, the patient running some temperature and a variable pulse. The 14th week the patient was allowed to get up, the murmur having entirely disappeared.

No. 3.—Miss W. O., nurse. Had most of the diseases of childhood. Typhoid fever at age of ten and recurrent attacks of appendicitis since that time. January 19 she was called to nurse case No. 1. January 23 she developed scarlet fever and was sent to the Cook County Hospital. On arriving, temperature was 104°, pulse 132, reaching 160 during the first night and becoming imperceptible several times. During the second day there was evidence of collapse. A diagnosis of myocarditis was made by Dr. Baum.

No. 4.—C. G., male, age 33. At age of 21 had la grippe. One year later had an attack of appendicitis, but was not operated. Otherwise has always been well. On February 13 he visited my office. On examination the symptoms of scarlet fever were well marked, and on questioning found that the rash had been present two days. Temperature at the time being 100.2°, pulse 108. Third day complained of pain in the left side. Sixth day pulse varied from 60-96, irregular; slight temperature. Weakness and restlessness present. Cardiac dullness greatly increased; apex diffuse and indistinct. Eighth day pulse very irregular, hands and feet cold and clammy. Patient much depressed. Ninth day apex beat outside nipple line; no murmur present. Increased dullness was noted in transverse and

vertical diameters. Heart tones distant. Tension of right radial artery much lower than left. Myocarditis and pericarditis with effusion were evident. Eleventh day complained of precordial pain. Apex beat not obtainable. Thirteenth day pulse increased from 60 to 110 in one hour, becoming very irregular throughout the day. Fifteenth day at 2:15, pulse 68 and regular; at 2:30, pulse 90, very irregular and compressible. Sixteenth day, dullness not so marked; pulse slightly irregular. From this time gradual improvement was noted until 20th day, when patient had sinking spell; pulse 64-90, becoming very irregular, and evidence of collapse. Since that time gradual improvement has been seen.

Prevention of Heart Complications.

I feel that justice cannot be done this phase of the subject without entering to some extent into the treatment and general management of the cases as well as some of the complications, as it is upon these factors largely that affections of the heart depend. I shall limit myself to the most important conditions.

First. As soon as the diagnosis is made these patients should be put to bed for at least three weeks, no matter how slight the affection may be, as we often have the most severe complications with the mildest attacks. Late nephritis is especially frequent and one of the prime etiological factors of heart lesions.

Second. The diet should be strictly liquid—milk to be preferred, although gruels and broths are quite permissible. At all events the patient should take freely of water.

Third. Antipyretics should not be used for two reasons—1st, because they are not needed in the mild cases; 2nd, because they are too depressing to be used in the severe cases.

We should depend upon the cold sponge, the pack or the evaporation bath, if necessary, but do not think it wise to use the tub bath, because of the fear and strain connected with its application.

Fourth. Special attention should be given to oral sepsis, for not only is it a constant generator of toxins, but also the important factor in producing adenitis, cellulitis and otitis media that we so frequently see, and which still further endanger the heart.

In addition to the gargles and sprays generally used these cases should receive frequent nasal irrigation (best with a fountain bag) of normal salt solution, 2 per cent. boric acid solution, or bichloride of mercury, 1:10,000 to 1:6,000—the child lying on his abdomen, the mouth being kept open to prevent swallowing.

Fifth. The skin should be kept soft and active by the frequent use of baths and the application of lard or lanolin containing from one to two per cent. carbolic acid, which destroys the scales and relieves the itching so frequently present.

Sixth. The bowels should be watched closely throughout the disease, calomel being administered at the beginning and at intervals throughout the attack. Salines are of value and one should not forget the importance of daily colonic flushings with normal salt solution.

Seventh. It is my custom to use mild non-irritating diuretics throughout the disease, such as spirits of nitrous ether, or liquor ammonii acetatis, and in the ten cases I have treated during the recent epidemic I have not even found a trace of albumen, with careful watching.

Eighth. When vomiting is persistent all medication should be discontinued for a short period, excepting perhaps the addition of lime water to the milk. If the angina is not too severe, lavage may be used if necessary.

Ninth. The treatment of the different heart lesions varies so little that I shall take them up collectively:

(a) Absolute rest upon the back, the pillow being removed. (b) The patient should be in a large, well-ventilated room, care being taken to avoid a draught. (c) A good nurse is indispensable, as it is impossible to care for these cases in any other way. (d) The ideal diet should be rich in albuminous foods, but here we are handicapped by the danger of acute nephritis; however, we should feed them as well as conditions will permit. (e) The eliminative treatment should be the same as given under prevention, unless the cases are very severe, when it is wise to dispense even with the bath and flushing. (f) In no case should the patient be allowed to raise up or turn on the left side. (g) If the patient be nervous or restless, this should be controlled by the use of morphine in small doses, which is stimulating to the heart as well. Should above symptoms be extreme, large doses are indicated. (h) The proper use of stimulants requires frequent visits by the physician and the constant watching of a capable, trained nurse, as changes are sudden and many times without warning. (i) Strychnia is no doubt one of the best stimulants we have for these conditions, and should be given in every case, not only for its stimulating effect, but for its generative action on the heart muscle and nerves as well. (j) Alcoholic stimulants (especially brandy) are invaluable, and should be given in from half-dram to half-ounce doses, depending on the age as well as the condition of the patient. (k) As conditions are so variable and changes so sudden in these cases, we must rely to some extent upon the

nurse, as it is just as important not to overstimulate the heart as it is not to give enough. Camphor is one of the best stimulants we have at our command in these cases, which should be given in sterile olive oil, hypodermically, in from one-half to one-grain doses. I have seen the heart action improve by its use when other stimulants did not seem to have any effect whatever. The important features about its being given with oil hypodermically, are its slow absorption, continued action, at the same time allaying the nervous symptoms. The nurse should always have a hypo ready for immediate use. (l) Digitalis should not be used, especially when we have marked myocarditis, as the contraction of the arterioles increases the tension and favors dilatation. However, it may be of value when we have a rapid pulse with extremely low tension; the best preparation being fat-free tincture or freshly made infusion. (m) The use of the ice bag should not be forgotten where we have a rapid, irregular action. (n) Our guide in determining the time for the patient to get up should be the pulse and murmur (if one be present). The murmur should have disappeared and the pulse should not show more than a very slight increase from this exertion. Should the pulse show a distinct rise it is indicative that the heart is not able as yet to withstand the extra strain. (o) The anemia should receive its proper treatment with the peptonates or iron and arsenic.

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1205 WRIGHTWOOD AVENUE.

CORRESPONDENCE.

POLYCYSTIC LUTEIN DEGENERATION OF THE OVARIES.

TO THE EDITOR, AMERICAN JOURNAL OF OBSTETRICS:

Sir:—In the August, 1907, AMERICAN JOURNAL OF OBSTETRICS, Dr. Solomon Wiener, New York, calls attention to polycystic lutein degeneration of the ovary in cases of hydatid mole. Both on account of the infrequency of chorionepithelioma (benignum or malignum), and from the fact that so little has been said of the relation of this disease to cystic degeneration of the ovary in this country, a report of a single case in which histological examination has been made may be of interest to the surgeon and pathologist.

Miss T—, age 18, single, was delivered of a hydatid mole by Dr. I. W. at the Crittenden Home, Columbus, Ohio, September 27, 1906. She was supposed to be four months pregnant, but the uterus was that of a six months' pregnancy. Labor pains began September 25, she having had uterine hemorrhage for four weeks previous. Following delivery, the uterus failed to contract, and it was therefore washed out with hot water. The temperature went up and the pulse became rapid, but there were no chills or fever. Dr. J. F. Baldwin saw the patient October 2. His notes state: "Patient is very pallid, looks septic. On vaginal examination a mass is felt back of the uterus and to the left. There is another tumor-mass higher up and to the right, being outside the true pelvis. Owing to the conditions present and the appearance of the patient, the presumption is that we have a collection of pus in the pelvis and possibly in the mass on the right side."

Patient was removed to Grant Hospital, and operated upon by Dr. Baldwin, October 3, and both ovaries removed.

Pathological report: The larger ovary is oval in shape, measuring 9x12x13 cm. Its external surface is smooth, fairly regular in outline, and dark bluish in color. On section, a grape-like

cluster of small cysts is seen, the largest of which is the size of a guinea egg; the cyst walls vary from 1 to 5 mm. in thickness; the surface is broken up into irregular folds. The liquid in most of these cysts is clear and serous in nature; in a few it is thick, somewhat gelatinous, brownish in color. The yellow lining membrane of a corpus lutein cyst is lost, the color being from dark gray to that of clotted blood. The ovarian stroma is well vascularized and edematous; there is marked congestion and free hemorrhage. A few Gräafian follicles, variable in size, may be seen here and there. Everywhere there is a diffuse, small, round-celled infiltration. Scattered clumps of lutein cells may be seen throughout the ovarian stroma. The cells of most of these lutein masses look fairly normal—large, polygonal epithelial cells, with large, round, faintly-staining nuclei and cell body. Other cell masses appear in folds, consisting of several layers of cells, lining the small lutein cysts. The entire cell structure of this inner cyst wall takes on a deeper stain than the ordinary cells of a corpus lutea body. The nuclei are smaller, variable in size, with a few mitotic figures scattered about. The cells are round to cylindrical in shape. Some of the cysts contain a homogeneous granular material, while others show many red blood cells, a few leukocytes and exfoliated lutein cells.

The sharp folding of this cellular layer, with the underlying connective tissue being carried into the folds, together with the deep staining of the lutein cells, presents a picture not unlike a papillomatous cystoma. Cell bands may be seen burrowing into the ovarian stroma, and here and there small clumps of these irregular staining cells may be seen in deeper connective tissue. These characteristics, without a history of the case, might lead to a diagnosis of a malignant papillary cystoma.

The other ovary is somewhat smaller in size, but has the same histological structure.

August 19, 1907: Patient is alive and well at the present time.

J. J. COONS, B.S., M.D.

106 EAST BROAD STREET, COLUMBUS, OHIO.

ASEPSIA AND NOT ASEPSIS.

TO THE EDITOR, AMERICAN JOURNAL OF OBSTETRICS:

Sir:—Dr. Henry J. Garrigues, whose work in introducing asepsia into obstetrical practice is appreciated in your own article in the July issue of your excellent journal, has, from the time I began to speak on onomatology, been an outspoken friend of my plan of reform. As recently as July 24, 1907, he wrote to me from Tryon, N. C., of the acceptance of some onomatological suggestion I had made to him, and that he had given me credit in his "Text-book of Obstetrics." May I appeal to your generosity to insert my remarks on the correct term, "asepsia," instead of the incorrect one, "asepsis"? My reasons for making these remarks

are: (1) Dr. Garrigues and all colleagues who have true science at heart and are as conscientious as he is, will be pleased to see them in your journal; (2) it will aid my cause considerably when I can demonstrate such striking examples of grammatical errors in medical language as the word "asepsis." In my "Memorial on Medical Language" presented for consideration, *Rectoribus magnificis* of all the German universities I said: "The grammatical rule about the terminations is and ia in compound (Greek) words does not seem to be known to our nomenclators, as they use haphazard one or the other." This rule is the following: A Greek feminine noun which ends in sis, xis, and psis as the second component remains unchanged when the first component is a preposition, as for instance, proptosis, periptosis, diagnosis, *antiseptosis*; but if the first component is not a preposition, then in composition the ending is changed into sia, as diplacousia (and not diplacousis), gastropstia (and not gastropstis), *asepsia* (and not asepsis).

A. ROSE.

126 E. TWENTY-NINTH ST., NEW YORK. August 10, 1907.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of April 19, 1907.

The President, GEORGE N. ACKER, M.D., in the Chair.

DR. KELLEY read the essay of the evening on

ECTOPIC PREGNANCY.*

DR. STONE said it was hard to criticise a report of cases. As to the question of broad-ligament pregnancy, very few cases occurred. Most of those so diagnosed were simple rupture or abortion with encystment of the blood clots. Few observers admitted that ovarian pregnancy ever occurred, only a few cases being reported, and most of these not being above criticism. Broad-ligament cysts, teratomas, etc., might be diagnosed as broad ligament pregnancy. The diagnosis of unruptured tubal pregnancy was comparatively easy to make. After rupture occurred the diagnosis was more obscure, but the indications for operation were usually so plain that the diagnosis was not necessary. The attack of pain was usually the first symptom of rupture. The tube was very much distended then, and subsequent escape of blood was not so apt to cause pain. As to the treatment of the shock attending the rupture he at one time advised waiting. One case died as a result of hemorrhage, when if the saline solution transfusion had been employed (it occurred before saline solution

*See original article, page 481.

was used) she would probably have been saved. He believed we should transfuse and then operate. As to the etiology he had no knowledge that syphilis had anything to do with its causation. As to the question of sterility it was common for women to have one child and then an extrauterine pregnancy. In the early stages it was hard to tell whether the blood clot was due to a tubal pregnancy or not. In several cases which he considered ruptured tubal pregnancy the microscope did not confirm the diagnosis. It had not been his experience to see a large quantity of bright red blood when the abdomen was opened. Usually at the operation the blood which escaped was old, and bleeding was not going on, so that it was not necessary to hurry in the removal of the clots and blood.

DR. J. T. JOHNSON considered the essayist's series of twenty cases of tubal pregnancy with one death remarkable. Attention was attracted to the frequency of death from rupture of an ectopic pregnancy by the report of the coroner's inquests in Philadelphia many years ago. He thought the essayist wrong when he advised to wait until the shock was over before operating. Shock was due to hemorrhage and the outpouring of the blood into the peritoneal cavity. Measures to relieve shock tended to increase hemorrhage. He operated through the vagina in cases which had been neglected and where infection of the encysted blood had taken place. These cases could be more safely operated upon by this route than by the abdominal.

DR. LEWIS said that in making a diagnosis ectopic pregnancy might be confounded with appendicitis, and he cited a case where the mistake was made. With distention, rapidity of pulse and no fever the condition was not appendicitis. He cited a very interesting case of his own where there was an abdominal pregnancy at 8 1-2 months with eclampsia.

DR. GLAZEBROOK.—Death from ruptured pregnancy was more common than was usually thought. In the past year he had done between 125 and 150 autopsies in coroners' cases, and at least four or five of these were cases where death occurred from hemorrhage due to the rupture of a tubal pregnancy.

DR. VAUGHAN asked why gynecologists removed the ovary when they operated upon these cases. The women might need it for child-bearing purposes and also perhaps for its internal secretion.

DR. BOVÉE said that in reply to Dr. Vaughan's question he would say that the same general principles applied here as in other cases. In women under forty years, if it was considered safe to leave the ovary, it was usually not removed. In women over forty years of age he removed it. So far as the internal secretion of the ovary was concerned, he challenged anyone to prove that such a thing existed. It was merely a chimerical belief. There was no organ in the body which had a secretion with any such function. He had recently had a case of combined

uterine and ectopic pregnancy. He was not quite in accord with those who said that old cases of ruptured tubal pregnancy could be safely opened through the vagina. The only cases, however, in which it was advisable were where the clot was infected, and here it was not safe to remove too much of the clot. There had been a case recently in the Providence Hospital where hemorrhage occurred several hours after this procedure. Another point which he would make was not to drain through the vagina in these cases. The condition here was very different from that in pus cases. In tubal pregnancy one did not find so complete a shutting off of the general cavity, and hence the danger of peritonitis. He would not transfuse with salt solution until the bleeding had stopped, and he would usually infuse under the skin rather than into a vein. The influx of the solution into the circulation tended to increase hemorrhage because it increased the volume of the blood.

DR. STONE asked Dr. Bovée what his method of treatment for the shock and immediate effects of the loss of blood was if he did not transfuse.

DR. BOVÉE said that one could demonstrate the effect of transfusing large quantities of salt solution before operation. The hemorrhage was increased. In very urgent cases one could compress the aorta or other large vessels or give ergot.

DR. FRY asked Dr. Bovée if he would not use salt solution in marked hemorrhage in typhoid fever.

DR. BOVÉE replied that active hemorrhage in typhoid had usually ceased when discovered, so that it would be safe to employ salt solution, but he would advise giving it beneath the skin and not into a vein.

DR. J. T. JOHNSON exhibited a case of

LARGE SUBPERITONEAL TUMOR.

Mrs. M., white, married, aged 28, mother of two children, youngest 5 years old, had had several abortions and was not willing to have any more children. She was sent to Georgetown University Hospital last week to be treated for a large abdominal tumor which had been growing since November last. The diagnosis was pregnancy, or some kind of abdominal tumor. I felt certain after careful and repeated examinations that she could not be pregnant, and leaned toward the diagnosis of a soft pediculated uterine myoma or a multilocular nonfluctuating cyst. From bimanual and percussion examination, I was sure the enlargement was due to a soft, solid growth or to a thick fluid within a cyst. She had suffered no pain and complained of no symptoms except those naturally resulting from the size and weight of the growth. She had lost only six pounds in weight in the last six months. Upon opening the abdomen yesterday it became apparent that the tumor had no connection whatever with the uterus or its appendages, but was of retroperitoneal origin. Its softness gave the sensation of fluctuation, and I plunged a large trocar into it, but not a drop of fluid escaped. The tumor could be easily pushed

in all directions, although covered by thickened mesentery with several coils of intestine closely adherent to it. Many bloodvessels were in undesirable evidence. I made an opening through its mesenteric covering and enucleated this solid tumor from the folds of the mesentery. There was no pedicle or vessels of any size to ligate. After its removal there was oozing of venous blood from all parts of the cavity from which it came. A few profusely bleeding vessels were tied with catgut ligatures, and finally the bleeding ceased after repeated packings with hot gauze pads. Some of the flaps of the tumor covering were cut away; their oozing edges were sewed over with a running suture of fine catgut and the sides of the cavity pressed together and stitched as tightly as possible without puncturing intestines or the mesenteric vessels, which seemed to be much more numerous than usual. There was some ascitic fluid in the abdominal cavity. This, with all blood, was sponged out and the abdomen was filled with hot salt solution and then closed as usual. The operation lasted an hour and twenty minutes. There was some shock following the operation, but this evening the patient has a temperature of 99° and pulse varying from 100 to 110; is bright and cheerful; says she is hungry, and has no doubt of her recovery. The tumor looks like a lipoma, but may be a sarcoma. I find that authors recommend drainage of these retroperitoneal cavities. As there were no bleeding and no doubtful fluid from the tumor I closed without drainage.

DR. GLAZEBROOK showed a fresh specimen of a *thyroid gland with a parathyroid body*, and DR. FRY a case of *ectopic pregnancy at the eighth week*.

DR. FRY reported a case of

TOXEMIA OF PREGNANCY RELIEVED BY THE ADMINISTRATION OF THYROID EXTRACT.

Toxemia of pregnancy (See AMERICAN JOURNAL OF OBSTETRICS, April, 1907, p. 577) developed gradually, and was accompanied by uniform decline of specific gravity of urine and percentage of urea excretion. The urinary analysis extended over a period from July 18 to December 14, 1906. At the last examination the specific gravity was 1.005, and urea was less than one-half of one per cent. No albumen or casts. At the time of the December examination the patient had suffered for two weeks with headache, insomnia, and indigestion. He made no change whatever in diet or mode of living, but gave 5 grains of thyroid t.i.d. The examination of the urine made thirty-six hours after having begun treatment showed a rise of specific gravity to 1.018; percentage of urea to 2.5. The above symptoms disappeared. The tablets were kept up twice daily for two weeks and omitted. Urinary excretion became satisfactory, and patient was delivered normally one month ago.

DR. BOVÉE reported a case of

CALCIFIED OVARIAN PAPILLOMA.

Mrs. C. B., white, 67 years of age, admitted to Providence Hospital, April 10, 1907. Patient had enjoyed the best of health, with the exception of yellow fever some forty years ago, from which she made a good recovery. Menstruation began at fourteen; had always been regular, with a moderate flow, lasting from two to three days. Was never pregnant. Menopause began at the age of forty-nine, and since that time there had been no vaginal discharge. Patient dated her present illness from a fall she had in October, 1906, and an attack of influenza in December, 1906. About a month ago the abdomen began to enlarge, and had continued to do so until the present time, and the patient now looked as if she were in the last month of pregnancy, and suffered a great deal of discomfort from pressure. A double salpingo-öophorectomy was done on April 18, 1907. The mass extended to the umbilicus from the bottom of the cul-de-sac, and was firmly adherent to the anterior abdominal wall nearly up to the umbilicus and to the bladder, uterus, omentum, and intestines. Its many pockets contained fluid of various colors (brown, yellow, transparent, and white) and degrees of consistency. The adhesions were separated with great difficulty and much intestinal and omental suturing. The interior of the mass was nearly as hard as a stone, and contained a cup-shaped excuvation having the capacity of about six ounces. A few adhesions to the rectum seemed to have suspicious spots, but it was not deemed wise to remove them. A papilloma was apparently beginning to develop in the right ovary. Though not large, it was removed. Submammary injection of a quart of normal salt solution was begun with the operation, as the red blood cells numbered but 3,030,000 and the hemoglobin was only 50 per cent.

DR. BOVÉE also reported a case of

COMBINED ECTOPIC AND UTERINE PREGNANCY.

Mrs. A. W., colored, age 37 years, admitted to Columbia Hospital, March 30, 1907; mother of three children, last of which was born in 1900. Had been married fifteen years, and was employed as a housemaid. She had had no abortions or miscarriages. Her family and previous histories were negative. Menstruation, until recently, had been regular in time, quantity, and duration, being always painful and profuse, and lasting eight or nine days. The last period began March 17, 1907, and ceased the 20th. Menstruation in January, February, and March was delayed, scanty, and exceedingly painful. During the six weeks just preceding admission she had continually suffered with severe cramp-like pain in the lower half of the abdomen, at the onset of which vomiting had occurred. During the first two weeks of her illness she continued her duties as housemaid, and during the six weeks

there had been no chills, fever, or sweats. Urination and defecation had been extremely painful and slight leucorrhea had appeared. No other symptoms suggestive of pregnancy, such as morning sickness, breast signs, discoloration of the vagina, frequent urination, or abdominal enlargement, were present. On admission, pulse was 84 and temperature 99°. On examination, the uterus was found crowded upward and forward by a boggy mass extending from the bottom of the cul-de-sac of Douglas to near the umbilicus. Posterior colpotomy was done April 12, 1907. As old blood escaped from the incision, gauze was packed into the cul-de-sac and the abdomen immediately opened. A large amount of free, dark liquid and coagulated blood escaped or was removed from the general peritoneal cavity by sponging. The large mass was found to consist of the uterus apparently at about the fourth month of gestation, a markedly enlarged and adherent appendage which had undergone degeneration from preexisting inflammation, and the right appendage. The right ovary was bound down by adhesions and the fimbriated end of the right tube much dilated, though the tube itself was not materially enlarged. A fetus of about four months was found floating in the pelvic cavity and was removed. The patient was kept under morphia to prevent abortion, the gauze packed into the cul-de-sac from below was removed the following morning. Salt solution was given by bowel every three hours. The abdominal wound down to the peritoneum opened on the fourth day, showing early absorption of kangaroo tendon, the knots remaining intact. Chloroform was administered, and the wound was again closed with the same suture material. On the sixth day the patient developed a recto-vaginal fistula and was delirious. Feeding exclusively by bowel had been practised for two days. Salt solution enemata after this time would usually be retained, though occasionally discharged through the vagina. Subcutaneous feeding was then resorted to, the white of one egg dissolved in a quart of salt solution being given every four hours. On the eighth day pus was washed out of the cul-de-sac by irrigation. Severe hemorrhage from the uterus occurred, and vaginal packing and douche both proved ineffectual. Death occurred on the eleventh day after operation. Post-mortem examination showed a low grade of peritonitis and no abdominal intestinal opening could be located.

DR. MILLER reported a case of

CARCINOMA OF THE CORPUS UTERI.

Miss B., aged fifty-three years, gave the following history. She began about two years ago to have a blood-stained or brownish discharge and to lose in weight. While the discharge was at first blood-stained, and she had, in December, 1906, a profuse flow of blood, it was generally a cloudy, watery flow without odor. Enormous quantities of this serous discharge have continued to the present time. She had a cough for months, which disappeared

after a curettage performed by Dr. Jackson about three weeks ago, when he obtained a large quantity of whitish granular material which was diagnosed carcinoma by Dr. Nichols. Since the curettage the discharge had had the appearance of thin pus. The examination showed a retroverted soft uterus about the size and consistency of a 2½-months' pregnancy. A few nodules could be felt on the surface. The cervix was normal, and there was no induration of the broad ligaments. The operation, an abdominal panhysterectomy, was easy, and during the handling of the uterus a considerable amount of brain-like substance and blood was squeezed out into the vagina. Vaginal drainage. The specimen showed a pedunculated tumor with a base about 2 cm. in diameter, springing from the uterine mucosa near the fundus. It was friable, and there was, microscopically, no invasion of the muscular tissue of the uterus and no involvement of the lymph nodes. A few myomatous nodules were to be seen in the uterine wall. The prognosis of the case was good, although it was of at least two years' standing.

Meeting of May 3, 1907.

The President, GEO. N. ACKER, M.D., in the Chair.

DR. COOKE presented

AN AMNIOTIC SAC OF SMALL SIZE, INTACT.

DR. J. WESLEY BOVÉE presented a specimen of mammary cancer which offered the following interesting points: 1, heredity of cancer; 2, early operation; 3, early involvement of the axillary lymph nodes, and 4, the probable absence of irritation. The patient was white, fifty years of age, never married, very thin and nervous. Her nervousness was exaggerated by caring for her mother who had died one month before from cancer of the uterus. She was seized with severe pain in the right breast one night and discovered a small, hard, tender mass in the upper part of it. The following morning she was seen by Dr. Bovée, who, next day, removed the breast and pectoral muscles, cleaning out the axilla carefully. A mass less than an inch in diameter was found in the upper part of the right breast and immediate operation advised. At the operation a lymph node nearly an inch in diameter was found in the axilla. The report of the pathologist showed the growths in the breast and lymph-node to be carcinomata.

DR. BALLOCH said that Dr. Bovée's specimen was interesting, first, because of its very early stage, and second, because some advocate partial removal of the breast in cases which are diagnosed interstitial mastitis. The specimen shows that in such cases the whole gland should be removed. The early involvement of the lymph-gland was noteworthy.

DR. VAUGHAN said that if tumors of the breast were evidently

malignant or were doubtful, the best plan was to remove the entire breast with the muscles, fat, etc., but there was not the slightest doubt that too many breasts were removed where the tumors were not malignant. The microscope was not infallible. One of the greatest pathologists in America at one examination pronounced a tumor to be an epithelioma, and upon another examination to be a sarcoma. One should consider both the clinical and the microscopical evidence in doubtful cases. His plan was to expose the tumor at the operation and examine as to infiltrations, etc., and then to remove it if he regarded it as malignant.

DR. BOVÉE said that his determination to operate at once was based largely upon the history of heredity. If it had not been for the history of cancer occurring in the family he would probably have delayed and delayed too long. Many apparently hopeless cases were cured by the radical operation. As to determining the malignancy of the growth by exposure at operation and noting infiltration, he would say that he did not like to expose the tumor, and the want of infiltration did not prove it to be non-malignant. He believed in removing the whole tumor and then examining it and if he was then convinced that it was malignant he would do the radical operation. In this case the history of heredity and the sudden pain caused him to do the radical operation.

DR. I. S. STONE read the essay of the evening on

CHORIOEPITHELIOMA.*

DR. KING said that Dr. Stone had accentuated the main fact in the treatment, *i.e.*, where the disease had been diagnosed only a complete hysterectomy could cure. There were many inexplicable things about chorioepithelioma and one of them was that after metastasis had occurred in the lung or elsewhere cure might result. This was at present inexplicable. He wished to express an idea of his in relation to these growths. Could spermatozoa have anything to do with their development? What became of the millions of them that invaded the uterus and Fallopian tubes? The syncytial layers from which the growth was supposed to originate were simply the outer layer of ectoderm. This outer layer was thrown off and he wondered if the spermatozoa had anything to do with this throwing off.

DR. SMITH said that some years ago Dr. King had read a paper upon this subject in the Medical Society and recalled a case of Tyler Smith's where a hydatidiform mole had caused perforation of the uterus.

DR. MILLER said that Marchand and the majority of observers believed that the growth was a malignant degeneration of the two layers of chorionic epithelium and hence entirely of fetal origin. The fact that Schmorl had had a case in which there were metastases and no growth was found in the uterus could be ex-

*See original article, page 433.

plained only by Marchand's theory. Veit believed the tumor was simply a sarcoma whose cells had undergone changes in appearance due to the influences of pregnancy.

DR. VAUGHAN did not think it surprising that death did not always follow metastases in the lung. We were not sure that all metastases of malignant tumors continued to grow.

DR. STONE said that microscopical examination of tissues obtained from the uterus early in suspicious cases might show the presence of the disease when cure might be effected by an operation. He believed many cases escaped notice through lack of examination of tissues. He and Dr. Ashby operated on a case at the Columbia Hospital several years ago, shortly after labor. The uterus and soft structures of the pelvis were invaded by a growth, the nature of which was not recognized at the time, but which was probably chorioepithelioma.

Meeting of May 17, 1907.

The President, G. N. ACKER, M.D., in the Chair.

DR. FRY presented

A LARGE FIBROID TUMOR.

Mrs. M., aged 32, married, multipara, had suffered from a fibroid of the uterus for some years. Eight years ago she was advised to have it removed. Tried electricity for a time. Dr. Fry saw the patient one week ago. She had been in bed six weeks. Uterine hemorrhage prolonged and severe. Patient very anemic. Hemoglobin, 50 per cent.; red cells, 3,000,000. The tumor extended to above the umbilicus; surface of abdomen sensitive; pelvis blocked by growth, which extended to within an inch of the vulva. Dr. Fry advised operation immediately before the time for the next menstruation. The patient was fed up and given a saline solution in the rectum morning and night. May 16, tumor removed. Few adhesions. The mass in the vagina was an outgrowth from the body of the uterus and the cervix was pushed up high in front. An intraligamentous cyst in the left broad ligament contained about 250 c.c. of fluid. The intestines were extensively adherent to the sac, which was opened and stitched to the abdominal wall with a drainage tube inserted. Patient reacted well and was convalescing nicely.

DR. J. T. JOHNSON said that the symptoms of pressure upon the bladder and rectum which he had predicted when he had treated the patient a number of years ago had come to pass. The patient was in an unfavorable condition for the operation at the time it was performed, but she had accepted her physician's advice. The lesson to be drawn from the case was that the operation should be performed before the tumors became so large. When removed early the patients escape many ill effects of these

tumors, a fact which many general practitioners did not appreciate. The case also showed that these tumors were not benign since they might undergo various degenerations. Degenerations of the heart also occurred which made the operations more dangerous than they would be otherwise.

DR. FREDERICK of Buffalo said that he had seen the operation and had recognized that the patient was in an unsatisfactory condition for operation. For fifteen years he had been watching about a dozen women who had fibroid tumors and who had refused operation. He had become convinced that except in small subperitoneal tumors which were not growing rapidly we should consider fibroids malign in character. In some cases there was no hemorrhage and he expected that the tumors would undergo atrophy at the menopause. All went five to seven years beyond the usual age for the change of life. One case died of pulmonary embolism, another of sepsis following phlebitis. He had recently seen another who, at 55 years of age, had not ceased menstruating and whose general health was very poor. Another passed the menopause several years ago and there had been no subsequent decrease in size of the tumor. Such was the general trend of these patients. Any woman with a growing fibroid should be operated upon.

DR. FRY said the reason the woman had deferred being operated upon so long was because an aunt had carried a tumor forty years. The case was reported before the society by an ex-member as a cure by the Apostoli method.

DR. STONE showed a specimen of gall bladder removed for

CHOLELITHIASIS.

Mrs. R., white, aged 40, was admitted to Columbia Hospital in 1907. She had been under the care of Dr. Snowden of Alexandria, Va., who called Dr. Ruffin of this city in consultation. They made a diagnosis of distended gall-bladder and advised operation. The speaker found the liver at least two inches below the ribs and the tumor outline about on a level with the umbilicus. It was freely movable between the fingers of the left hand pressed in the right loin and those of the right applied over the tumor which was due to the prolapse of the liver. The condition of the patient's heart would, under ordinary circumstances, have negatived operation, but the condition of the gall-bladder appeared to demand prompt attention. The pulse was very irregular, about 75 per minute at the wrist, and the actual number of heart contractions numbered anywhere between 120 and 160. Her heart seemed to show a former acute endocarditis, but there was every reason to fear some muscular disease, besides the evident insufficiency of the valves. No accident happened during the operation. Rubber-tube drainage was provided and at no time was there apparent any complication or delay in the healing of the wound. The tubes were removed on the sixth day. At 1 A.M.

on the latter half of the third day she told the house physician, Dr. Sullivan, that she was feeling better than at any time for weeks. At about 2.30 A.M. she had a convulsion and was slightly delirious. Soon after this the nurse found that her right side was paralyzed and that she was unable to speak so as to be understood. At first the bladder and bowel were involved, but during her stay in the hospital the functions of both improved, and she usually avoided soiling the bed. The speaker thought her condition due to embolism of some of the cerebral arteries. The patient continued in much the same condition for several days, when the left leg was found to have lost its power of motion. Her mental condition was excellent, she could swallow food safely after the first few days of her illness and other functions had improved. Finally discoloration of the skin of both legs above the ankle and on the soles of the feet was observed. The soles of the feet and the toes were most involved, but the legs were both cold and beginning to atrophy about half way between the ankle and knee. Her loss of motion was more marked in the right leg; she could still move the left, but was prevented from doing so by pain. Sensation was diminished in both legs and, of course, absent in the gangrenous portions, but she had hyperesthesia and required anodynes for pain in both legs which was excruciating when her limbs were moved. Her blood showed a high leukocytosis after the development of gangrene, but no other special change was observed.

DR. RUFFIN said that the diagnosis of gallstones was perfectly easy. Following a dose of calomel the patient developed a tumor in the region of the gall-bladder evidently due to the lodgment of a stone in the cystic duct. She had pain, fever, leukocytosis of 16,000. Her heart was enlarged, very irregular in action, and its impulses were lacking in strength. No murmur could be detected and the heart trouble was thought to be myocarditis. The operation was done rapidly, and for 48 hours the patient did well. She was found by the resident about 10 o'clock at night unconscious and restless. One and one-half hours later there was a partial paralysis which gradually grew into a complete hemiplegia. Later there was loss of motion in both legs and the pulse in them gradually disappeared. The question of diagnosis was interesting as to whether the lesions were multiple thrombi or emboli. They seemed to him to be thrombotic in character as the paralysis came on gradually and increased in extent, which would probably not have happened had they been embolic in character.

DR. MILLER said that he had seen the patient in the hospital. The lesions seemed to be embolic in character. The points in favor of embolism were: the diseased heart as a source of the emboli, the multiple character of the lesions occurring as they did in the brain and both legs, and the fact that the lesions in the legs were arterial in character. The youth of the patient, the negative history as regarded syphilis and the absence of any noticeable arteriosclerosis would favor embolism rather than thrombosis. The

gradual occurrence of the paralysis might have been only apparent, or more likely the full effect of the brain embolus was seen only after some time. Since the process of softening proceeds gradually and the nerve fibers degenerate and become fatty, one would not expect to see the full effects of embolism at once. A secondary thrombus, at times, is the result of embolism, and this condition could explain the increasing paralysis. The weight of evidence in his opinion was in favor of embolism and not primary thrombosis.

DR. STONE also reported a case of

RETROPERITONEAL APPENDICITIS.

Mrs. D., white, aged 43 had been ill for eight days with pain in the region of the right ovary, accompanied by slight rise in temperature. Her physician, Dr. Lemon of this city, called in consultation the reporter, who made an examination under anesthesia. It was difficult to make a diagnosis owing to the unusual location of the induration which was easily felt from the external surface of the abdomen just above Poupart's ligament, and reached a point on a level with the anterior superior spine of the ilium. Its area was about three by four inches. On examination under anesthesia it was possible to outline the lower surface of the tumor, which in every respect appeared to be an ovary and tube, or the appendix vermiformis, adherent to the parietes, or in the iliac fossa. Operation was performed on April 20, 1907. The omentum was adherent over the cecum in the iliac fossa. The cecum was therefore at least four inches below its usual position. The appendix was found under the peritoneal cover but with its tip or distal end exposed. About one-half ounce of pus escaped when the appendix and cecum were elevated from the deep fold in which they were imbedded. The appendix was necrotic and was removed in shreds. After treating the stump an independent perforation was found in the cecum, less than an inch from the base of the appendix, which permitted the passage of sound into the bowel. With some difficulty this was closed, for the cecum at this point was very soft and its walls were easily torn. A second opening was made through the abdominal wall near the anterior superior spine of the ilium, and a tube was introduced outside of the peritoneum down to the seat of the abscess under the cecum. The broad ligament was now drawn over the end of the cecum and sutured there, with the intention of walling off the infected area. The omentum was also long enough to be used in the same way. The patient recovered without a single unfavorable symptom.

DR. J. T. JOHNSON reported a case of

CRANIOTOMY.

About two years ago he was called to the assistance of two physicians who had been in attendance upon a labor

case for about thirty hours, a primipara thirty-six years of age. She had been under the influence of chloroform for several hours, during which time numerous unsuccessful efforts at forceps delivery had been made. Efforts at version also had been made, but as the bag of waters had been broken many hours and the uterus was quite firmly contracted down upon the body of the child, the only result had been to partially dislodge the head, so that it was impossible to determine the original presentation.

As the condition of the patient was bad and the child dead, he recommended craniotomy and with much difficulty extracted a child weighing about ten pounds.

The patient made a normal recovery. About a month ago, when about eight months pregnant, she came to engage his services, as her former physicians had refused to attend her. They had told her she ought never to allow herself to become pregnant again, as she could never give birth to a live child on account of her abnormally small pelvis.

She asked advice as to what could be done under the circumstances. Dr. Johnson suggested three methods of procedure, to wit: Induction of premature labor within the next week, when eight months and a week pregnant; or the primary Cesarean section performed just before her labor was expected to begin; or to let her enter upon her labor and be governed by circumstances. She decided upon a primary Cesarean section, after reading the recent literature upon the subject. So it was settled that she should come in from her country home a week before the date agreed upon as the possible end of pregnancy, take a private room in the hospital, and undergo the usual preparation for a deliberate operation.

She relied absolutely upon the opinions of her former attendants, that she could never give birth to a live child and that she herself would probably perish in the attempt.

The patient entered the Georgetown University Hospital on April 8 to be prepared for operation. The date of her expected confinement was the 15th. The time set for operating was 2:30 P.M., April 12. On the previous evening she had an antiseptic vaginal douche, the abdomen was shaved, and at night she was given an unusually large dose of castor oil.

The resident physician telephoned about 2 o'clock in the morning that the oil was causing unusual griping pains and both he and the patient feared that if they were not arrested her labor might be started up. He was told to give her a quarter of a grain of morphia hypodermically and to have everything prepared for an operation at 6 A.M. in case labor pains should begin.

Soon after his message the bag of waters broke and very powerful and almost continuous pains soon expelled a female child which weighed about eight pounds. Its head appeared unusually small and was compressible.

The child was doing well when a week old; so was the mother, when the stitches were removed from her ruptured perineum.

DR. FRY said that three valuable lessons ought to be learned from the case: (1) The folly of a patient reading up her own case and dictating to the physician what should be done. (2) Many women were told after a difficult labor that they could not bear a child without surgical aid. The explanation of this was that in their first labor the difficulty in childbirth was due in a large number of cases to posterior occiput position. (3) No one was in a position to outline the proper treatment in any case of obstetrics without a thorough examination of the patient, measuring the pelvis, and the adaptation of the fetal head.

DR. ADAMS said that the most valuable lesson to be learned was that we should never accept an opinion of another, but should examine the patient ourselves.

DR. WM. SPRIGG read the essay of the evening,

INFLUENZAL MENINGITIS.*

DR. ADAMS said that in the past four weeks he had seen six cases of meningitis of various types, *i.e.* meningococcus, tuberculous, and one case of simple meningitis. The first case due to the meningococcus was of extreme severity. The parotid and sub-maxillary glands were involved, showing a general infection. The case reported by Dr. Sprigg was the most rapidly fatal one he had ever seen. The tetanic convulsions did not conform to any case which he has ever seen, nor had he ever before seen such hyperesthesia. He thought on this account that some mistake had been made in the medicine which had been given the child, and suspected strychnine poisoning. In the case of simple meningitis the child became sick eleven days ago. The retraction of the head was marked, yet the girl was still conscious. Her physician was loath to allow lumbar puncture to be performed, yet it was done. Only one-half ounce of fluid was obtained, and it would probably do no good toward relieving the pressure symptoms. He thought we waited too long before doing lumbar puncture. The sooner one could make the diagnosis of the form the more efficient should be the treatment. The mortality in all cases was very high, 75 per cent. being the lowest. Of those who did not die many were left blind or deaf.

DR. BEHREND said that if meningitis due to the influenza bacillus occurred frequently, the diagnosis would have been made by means of lumbar puncture. The failure to recognize the cause might be explained by the morphology of the organism. In the majority of such cases cultures were not made, and the coccus-like form would naturally make one think of the more common meningococcus. The influenza bacillus assumed various forms. In a recent case in which he discovered the influenza bacillus, the shape of the organism made him think of the meningococcus, but

*See original article, page 467.

as he noticed some of the organisms were larger than this bacterium, he made cultures where he found that it grew in bacillus form. The apparent diplococcus form was due to polar staining. Another misleading feature was that the organism was found in the pus cells. The influenza organism and the bacillus of leprosy were practically the only two bacilli found in the leukocytes, and these could be distinguished by cultural tests. The colonies of the influenza bacillus were very small, and, under the low power of the microscope gave the appearance of frosted glass, or dew drops which did not coalesce. The organism, especially after being grown on culture media, differed materially from the description usually given of it. It might grow to a size comparable to the anthrax bacillus, or there might be bulbous or pear-shaped involution forms. It died rapidly, within twenty-four hours at times, so that special care should be taken in making cultures. This property was of interest in connection with the disease. The infection was probably conveyed by direct contact in the majority of cases, and not through fomites. Park had said that chronic influenza might exist with the organisms alive in the nasal and bronchial secretions for months. The meninges were apparently very susceptible to the disease and had not the relative immunity that other tissues seem to possess. It was thought for some time not to be a pus-producing organism, but this had been disproved. The disease must produce a considerable amount of opsonins, as the bacteria were found in the leukocytes.

DR. WILKINSON said that he made the diagnosis of influenza after making cultures. Dr. Behrend's case was the first to be diagnosed as such in this country, and this one was the fifth. The inoculation of animals was interesting. The guinea-pig was the only laboratory animal which was susceptible, and the one which he inoculated showed signs of infection, but was apparently recovering.

DR. FREMONT-SMITH said that it was well known that the influenza bacillus did invade serous cavities. He had seen accounts of several cases of meningitis caused by influenza. The work of several men showed also that the organism might invade the media of arteries.

DR. SOTHORON said that he had seen a case of meningitis on the previous Saturday morning. The child was taken ill on Friday. On Saturday the temperature was 101° F., pulse 114 to 120. There were rigidity of neck, semicomatose condition and twitching of the muscles. He gave bromide of soda. On Sunday, marked rigidity of neck; Monday, same condition; Tuesday, a relaxation of the neck condition, but still semicomatose. On Friday full consciousness, and the child would apparently recover. The grandmother had bronchitis and her room was adjacent to that of the child.

DR. THOMAS said that he had recently had a case of meningitis in an adult who was suffering with typhoid fever where meningeal

symptoms developed. Lumbar puncture was done, which relieved symptoms and showed a bacillus which was not found in pus cells, but which would not grow. The case was probably a typhoid meningitis, but the diagnosis was in doubt. The use of diphtheria antitoxin in cases of meningitis had been tried in New York and Boston, but had been abandoned.

DR. FRY asked if the mental symptoms (delirium) would not have excluded strychnine poisoning.

DR. SPRIGG said the symptoms were not typical of strychnine poisoning, but simulated them. The mental inactivity should have excluded poisoning by strychnine. The type showed it to be something unusual. Lumbar puncture was a wise procedure, and if it did no good it would at least do no harm, and establish the diagnosis.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of July 3, 1907.

The President, DR. HERBERT R. SPENCER, in the Chair.

DR. FRANK E. TAYLOR read a short communication on

SUPPURATION IN AN OVARIAN CYST CAUSED BY THE BACILLUS TYPHOSUS.

A IV-para, aged 37, was admitted into Chelsea Hospital for Women in April, 1907. She had lived in India for the last fifteen years, and had enjoyed good health until April, 1906, when she had an attack of typhoid fever. During convalescence a freely movable abdominal tumor was discovered. This gradually increased in size, but caused no further signs or symptoms. On opening the abdomen the tumor was found to be a cyst of the left ovary deeply congested or inflamed. There were some adhesions to the omentum only. The cyst was easily removed entire. Recovery was ideal. The tumor was a unilocular cyst, size of a man's head, and held 2 1-2 pints of greenish-yellow pus free from odor. A pure culture of *Bacillus typhosus* was obtained from the pus. The organism was very thoroughly investigated and gave characteristic reactions. It agglutinated the serum of an immunized rabbit in dilutions of 1 in 4,000. A Widal with the patient's serum gave a positive reaction with 1 in 1,000 in one hour. The writer considers that infection reached the cyst by way of the blood stream, and that this case demonstrates the pyogenetic properties of the typhoid bacillus. Bacteriologically, he classes post-typhoid suppuration under three headings, viz.: (1) A mixed infection,

where both pyogenic cocci and the typhoid bacilli are present. (2) A secondary infection, caused by invasion of pyogenic cocci into an organ whose resisting power has been lessened as the result of the typhoid fever. (3) A pure infection, caused by the *Bacillus typhosus* alone, which undoubtedly possesses pyogenic properties under suitable conditions.

DR. SPENCER asked Dr. Taylor whether Widal's reaction was considered positive proof of the presence of typhoid fever. He knew that physicians did not regard it as such a few years ago. He was surprised to hear that the *Bacillus typhosus* could survive in ovarian fluid for twelve months.

MR. ALBAN DORAN referred to his case of perforating ulcers of the ileum from obstruction after ovariectomy, published in the thirtieth volume of the *Transactions of the Pathological Society*.

DR. TAYLOR, in reply, said that the value of Widal's reaction in diagnosis greatly depended upon the technique of its performance, especially with regard to the dilution and time limit employed. The reaction was not absolutely infallible.

The following specimens were shown:

DR. FRANK E. TAYLOR.—Two uteri showing a fundal ligament after hysterectomy.

MR. TARGETT.—Hemorrhage into the substance of a uterine fibroid.

MISS ALDRICH-BLAKE.—Skeleton of an extrauterine fetus from a woman in whom there was no history suggestive of such a gestation; carcinoma of cervix in a uterus, one horn of which was developed.

DR. LEWERS.—Two specimens of fibroid associated with bleeding after the menopause.

THE PRESIDENT.—A calcified fibroid enucleated for bleeding fifteen years after oöphorectomy.

DR. LONGRIDGE.—(1) A baby's breast. (2) Diaphragmatic hernia.

MRS. SCHARLIEB.—A myxomatous fibroid, weighing 23 1-2 pounds, removed by abdominal hysterectomy.

REVIEWS.

TREATMENT OF THE DISEASES OF CHILDREN. By CHARLES GILMORE KERLEY, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital, etc. Pp. 597, illustrated. Philadelphia and London: W. B. Saunders Company, 1907.

The keynote of this volume is attention to details and the treatment of each child as an individual and not by inflexible routine measures. In many places the text seems unnecessarily protracted, but often an apparently unnecessary digression serves

to impress an important fact. In pediatrics it is the little points that count. The book is devoted chiefly to treatment, but this is prefaced in most cases by a satisfactory synopsis of the symptoms and of such etiological factors and complications as furnish therapeutic indications. Illustrative cases and personal experiences are freely interspersed. The general therapy is most rational; such treatment with drugs as is recommended is usually thoroughly up-to-date.

In the section, General Considerations, the education of the mother and nurse and the treatment of each child as an individual case are the points chiefly emphasized. Much sensible advice is given, extending even to such matters as the interdiction of kissing. The author is not in favor of indiscriminate airing of children out of doors in unfavorable weather. The weight chart with its "normal" line is omitted from this work and physicians are advised against its use, as mothers will often make children ill by efforts to keep them up to this standard. For premature infants the writer prefers the use of an electric heating pad between blankets under the child to that of an incubator, which is liable to be imperfectly supplied with fresh air. Diseases of the new-born are briefly discussed. Under Nutrition and Growths is an excellent exposition of the subject of infant feeding, clear yet extremely thorough in the consideration of details. For the nursing mother the author advises the same diet as was usual before pregnancy. After nursing is well established he gives one bottle feeding daily, so that the child may be provided for in case of the temporary illness or absence of the mother, and particularly when a wet-nurse is employed, so that her services will not be indispensable. He speaks most favorably of the use of cereals, which he begins at the fifth to the seventh month as a diluent. He gives his own proofs of the infant's capacity for starch digestion which have been published recently.

This is followed by a section on gastroenteric diseases, in which the infrequent recommendation of the use of drugs is a most commendable feature. In the treatment of intussusception the writer advocates one attempt at reduction by water pressure before resorting to surgery. For fissure of the anus he does not stretch the sphincter, but cauterizes with silver nitrate. Under "Diseases of the Mouth, Throat, and Nose" he describes catarrhal, aphthous and ulcerative stomatitis under one heading as being different stages of the same affection. In acute inflammatory conditions of the mouth and pharynx he relies chiefly upon chlorate of potassium. Under "Diseases of the Respiratory Tract" he says that while many speak of "stomach cough," "nervous cough," etc., he has never seen a case in which the cough was not connected with the respiratory tract. The oiled-silk jacket is not used by the author. Under "Diseases of the Heart" and elsewhere the writer shows great partiality to tincture of *strophanthus* in cases with rapid heart action.

A section on contagious diseases follows. The writer advises against the serum treatment of scarlet fever. Attention to details is particularly evident in this section. In that on "The Urine" the value of colon flushings for suppression of urine is repeatedly mentioned, especially for acute nephritis. Pyelitis is considered by the writer to be a rare disease in children. Circumcision in the second week of life is advocated as a routine measure. In the section on the "Female Genitals" the writer favors, for the treatment of gonorrheal vulvo-vaginitis, douching four times a day, with the addition of boric acid to the water chiefly as a placebo, followed by the use of a dusting powder of boric acid, starch and zinc oxide. In the section on "Nervous Diseases" we note that in view of the association of chorea and rheumatism the writer gives sodium salicylate or aspirin in every case of chorea, at the same time beginning the administration of increasing doses of Fowler's solution. In the treatment of primary hereditary syphilis he relies upon bichloride of mercury internally. Under the heading "Deformities" he describes the treatment of umbilical hernia. For this he advises reduction and the application of a strip of zinc oxide plaster so as to hold a fold of skin at each side of the umbilicus together in the median line. Cleft palate should be operated upon between the first and second years, the child being fed regularly by gavage until that time. A useful section is that on "Diseases of the Skin." "Diseases of the Ear" are briefly discussed, as are "Glandular Diseases." For all cases of tuberculous adenitis, surgical treatment is advised. The correction of bad habits is described in the following section. Under the heading "Constitutional Diseases" the author groups obstructive jaundice, obesity, anemias, rachitis, scorbutus, cretinism, status lymphaticus, purpura and hemophilia. In the treatment of obstructive jaundice he opposes the use of calomel and milk diet as being likely to cause gastric disturbance, and favors the administration of rhubarb and soda, with water only unless food is desired, in which case he allows chicken or mutton broth and toast, with gradual return to regular diet. In anemias he relies chiefly upon fresh air and food, trusting little in iron except in chlorosis. In rachitis he has seen no value in phosphorus and none in any drug except as increasing the appetite and capacity for proper food.

Under "Infectious Diseases" the size of the dose of quinine recommended by the writer for malarial fever is noteworthy, considering that five grains three times a day usually proves successful in adults, especially if they are kept in bed. He sometimes gives as much as grs. xv. to xxx. to children from two to six years of age. In typhoid he gives little or no milk, and depends largely upon gruels until the temperature begins to fall, when he adds kumyss, matzoon, skimmed milk, scraped beef, and soft-boiled eggs. He favors the cold pack rather than the bath, as being less likely to excite and fatigue. Erysipelas is mentioned as the only disease in which it is wise to use alcohol as an early

and oftentimes as the only stimulant. Asthmatic bronchitis is said to be usually dependent upon the rheumatic state. These patients generally give a family history of rheumatism and subsist largely on red meats and sugars. The writer has been most successful in these cases by cutting out these articles of diet and giving sodium bicarbonate and sodium salicylate. In the treatment of acute articular rheumatism he does not recognize the value of local applications of methyl salicylate and the use of aspirin, although he emphasizes the disadvantages of the internal administration of sodium salicylate. Cyclic vomiting he considers and treats, dietetically and medicinally, as though of rheumatic origin.

"Temperature in Children" is the subject of interesting remarks, and those on "Instructions for the Summer" are most important. The section on "Therapeutic Measures" contains many useful suggestions. A long section on "Gymnastic Therapeutics," illustrated, and a table of "Drugs and Drug Dosage" terminate the volume, which is well worthy of perusal and a valuable reference work in time of need.

H. D.

ATLAS AND EPITOME OF DISEASES OF CHILDREN. By Dr. R. HECKER and Dr. J. TRUMPP of the University of Munich. Edited, with additions, by ISAAC A. ABT, M.D., Assistant Professor of the Diseases of Children in Rush Medical College, in affiliation with the University of Chicago. Pp. 453. With 48 colored plates, 147 black and white illustrations. Philadelphia and London: W. B. Saunders Company, 1907.

The character of this little volume is exactly described by its title, it being an epitome of diseases of children, more profusely illustrated than the average text-book, rather than a mere collection of cuts and plates with a rambling text interspersed. Naturally, especial prominence is given to those features best adapted to illustration, namely the pathology and symptomatology and methods of examination. The work opens with a consideration of the development of the infant. The author ascribes to teething a multitude of symptoms. It is satisfactory to note that the American editor adds the comment that it is doubtful whether dentition is really the cause of these symptoms, which are really those of acute conditions and disappear under appropriate treatment while dentition continues. Infant feeding is discussed very summarily. A number of practical points are contained in the chapter on history taking and in the description of methods of physical examination. On page 66 the printer has evidently entirely changed the translator's meaning by substituting the word "impossible" for "advisable" in the phrase "it is impossible to always percuss both sides during at least one whole respiratory period." Under the heading of "Dietetic Treatment of Disease" we note the advice to use veal, ham and sausage in chronic diseases where strength is needed, while caviar is recommended for children requiring an appetizer. Under "Hydrotherapy" is given

a brief résumé of its modes of application, including a list of "the most useful additions to baths," with very incomplete indications for their use. Mustard poultices are directed to be made with boiling water, one liter poured on one-half pound of mustard and stirred. A cloth is soaked in the supernatant liquid and applied for a half hour. Naturally a liberal amount of mustard is required when its oil is volatilized by the use of boiling water. On page 71 the word "after" has evidently been omitted from the second line of the description of cold sprays, which should read "usually [after] a warm or cold bath." Fortunately the editor has inserted a number of additions in the sections on therapy. These are often justified not only by the different climatic and other conditions in this country, but by the character of the original advice as well. On page 95 the author advises aspiration or incision of cephalhematoma, but the editor recommends expectant treatment only. Among the constitutional diseases, rachitis is described and illustrated quite extensively, with especial reference to the pathological features as contrasted with normal ossification. Hereditary syphilis and tuberculosis also receive much attention. In the article on cerebrospinal meningitis, on page 205, line 5, nystagmus is referred to as Kernig's symptom. The illustrations are particularly useful in the discussion of the exanthemata, and cutaneous diseases, and in the description of the anatomy of tracheotomy and the technique of intubation and other manipulations. The writer describes capillary bronchitis and bronchopneumonia as pathological entities capable of clinical differentiation, though he acknowledges that this is often difficult. Under intestinal diseases are given good colored plates of normal and abnormal stools. Fig. 128, intended to illustrate a urinal for children, shows chiefly the universally condemned "pacifier" in the subject's mouth. Miliaria and impetigo contagiosa are classified as forms of eczema. Aside from these criticisms it may be said that as an epitome the volume is useful and reliable as far as pathology and symptomatology and to a lesser degree diagnosis are concerned, but incomplete and sometimes unsatisfactory from the standpoint of therapy. The plates and illustrations are excellent, and only four temperature charts are duplicated among the 147 cuts which the title page claims.

H. D.

LEHRBUCH DER GYNÄKOLOGISCHEN DIAGNOSTIK. Von Dr. GEORG WINTER, O.O., Professor und Direktor der kgl. Universitäts-Frauenklinik in Königsberg i. Pr. Unter mitarbeit von PROF. CARL RUGE in Berlin. Mit. 4 Tafeln und 334 zum teil farbigen text abbildungen. Dritte, gänzlich umgearbeitete auflage. Leipzig: Verlag von T. Herzl, 1907, 647 pages.

Winter's "Gynecological Diagnosis" has been one of the prized possessions of the gynecologist ever since its first appearance in 1896. The publication of a third edition, after an interval of ten years, has essentially necessitated an almost entire revision. The

chapters in which most alterations have been made are those on general diagnosis, ectopic pregnancy, retroflexion, myoma, carcinoma of the uterus, diseases of the vulva and vagina and diseases of the urinary tract. The vast and important changes in our knowledge of gynecological pathological histology have been ably attended to, as in previous editions, by Prof. Ruge.

The work is divided into three main sections. The first is headed "General Diagnosis," and discusses the various methods of examination, the use of instruments, cystoscopy, microscopic, and bacteriological examinations and *x*-ray. This part concludes with a short summarizing chapter on "The Building Up of a Gynecological Diagnosis." This is a masterpiece and should be read by everyone. In it we are pleased to note that the author deprecates with fitting emphasis the still too prevalent tendency of "watching," in a patient suspected of malignant disease. The second section, on "Special Diagnosis," naturally covers the largest part of the book. In this part are also included the normal anatomy and histology of the female pelvic organs and the diagnosis of pregnancy. The final section is devoted to "Analytical Diagnosis," and treats of the etiology of hemorrhages, amenorrhea, dysmenorrhea, sterility, and the diagnosis of abdominal tumors.

It need hardly be said that the author's exposition of gynecological diagnosis is very thorough. Every phase of the subject is discussed with one exception; we are surprised to find no mention of the value of blood examinations. An especial feature is the importance paid to cystoscopic and pathological examinations, particularly the latter. Indeed, we can say that the scope of this volume is larger than the title indicates. Even were the text entirely stripped of the clinical side, the work would still form a complete and up-to-date monograph on the normal and pathological gross and microscopic anatomy of the female genital organs.

Another feature is the large number and excellence of the illustrations, most of which are original. The colored illustrations are well done, especially the cystoscopic pictures. The author reveals his experience as a teacher by the introduction of numerous schematic drawings. The pictures of microscopical specimens cannot be passed without a word of commendation. We know of no text-book in which the natural outlines are more truly represented. The text is very clear and is remarkably free from the unfortunate Teutonic tendency of overburdening the text with quotations that give one the feeling of reading a dictionary. This, in other words, means that the author has relied largely on his own observations. The German should prove easy, even to one whose attainments in this language are not very extensive. Indeed, we are surprised that no translation of this splendid book has thus far been attempted. It is more worthy of this honor than many that have attained this distinction. Altogether it has been a pleasure to review this book. E. M.

GYNECOLOGY AND ABDOMINAL SURGERY. Edited by HOWARD A. KELLY, M.D., F.R.C.S. (Hon. Edinb.), Professor of Gynecology Surgery at the Johns Hopkins University; Gynecologist to the Johns Hopkins Hospital, Baltimore, and CHARLES P. NOBLE, M.D., Clinical Professor of Gynecology at the Woman's Medical College, Philadelphia; Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia. Illustrated by Hermann Becker, Max Brödel, and others. In two volumes. Volume I., pp. 850. \$8 per volume. W. B. Saunders Company: Philadelphia and London, 1907.

The names of its distinguished editors, Kelly and Noble, guarantee the character of this work, the first in which gynecology and abdominal surgery have been recognized as practically inseparable, and where an attempt has been made to cover both fields. This broadening of the subject makes the work unique in its presentation and enhances the interest with which one must consider it.

In presenting their finished work the editors say: "Our associates, competitors, and generous critics, the general surgeons, will not deny that the great advances made in the gynecological field have constituted the very backbone and marrow of the abdominal surgery of to-day, and that *pari-passu* with the labors of the gynecologists have gone the developments of the surgery of the abdomen at large. These volumes are living witnesses of the unity of gynecology and abdominal surgery in the practical field, which it is our pleasure to proclaim, as we thus once more assert the unity of our art and the fraternity of those who practice it."

In making up the work the usual classification has been set aside to substitute one that the editors believe of great practical value. To meet the needs of the general practitioner, a section is devoted to medical gynecology. Certain obstetric or gynecobstetric subjects have been included, such as the puerperal injuries and infections, the treatment of incomplete abortion, ectopic pregnancy, and the Cesarean operations. This is done in the belief that it will prove of practical value to the physician, and will give the general surgeon practicing abdominal surgery without an obstetric training a broader and fuller view of the subject.

In general the subjects of the work are dealt with in a broad and liberal manner. Especial attention is devoted to modern surgical technique.

The illustrations are a very important and noticeable feature. They have nearly all been done by, or under the supervision of Hermann Becker, who has devoted more than four years to this work. A few were made by Max Brödel and others. They are fresh and graphic and fully up to the ideal of beauty, clearness, and accuracy which has made the work of those artists a world standard.

In type, paper, and general appearance these volumes are similar to well-known books by Dr. Kelly already published.

The scope and arrangement of the work can be shown by a list

of the chapter headings and the names of the authors, all men of the first authority in their departments.

The opening chapter, on the very important subject, "Gynecological Technique," by Howard Kelly, is a mirror of modern practice. His style is well shown by the following paragraphs on the use of *rubber gloves*: "When the hands have been conscientiously kept free from known infectious material, and have been disinfected after one of the methods described above, they are not liable to prove a source of infection. Since, however, the conscience is not equally acute in all, and since the surgeon who bears the responsibility cannot always know where the hands of his assistants have been, it is safer to adopt the use of rubber gloves as a routine practice for every one who handles the sutures, ligatures, dressings, instruments, and tissues" He who thinks that he can sterilize his hands by scrubbing with soap and water, and soaking them in chemicals after contact with virulent, resistant bacteria, is sooner or later destined to cause the wound infection and, perhaps, the death of his patient. "The operator or assistant who examines cases of puerperal infection, ulcerating carcinomata, or infected fibroids, or who brings his hands in contact with suppurating wounds, is a constant menace to the safety of his patients. The use of rubber gloves to protect the hands, while of the greatest value, has in certain ways served to break down the technique of aseptic surgery. The hands should be washed as carefully and sterilized as faithfully as if the gloves were not worn, for holes are frequently made by needle puncture during operation, and sometimes a glove must be taken off to aid the tactile sense during the operation; then the hands which have not been conscientiously prepared are liable to infect the patient. The operator may also imagine that, because of this protection, he can safely step from an infected case to a clean operation, while here a little hole in a glove may constitute a serious lapse in the technique. The use of thin gloves should form a part of the technique of the bimanual examination of every case suspected of being infected, in dressing those wounds where the hands come in contact with suppurating surfaces, in giving enemata by an assistant, and in the examination of pathological tissues."

Chapter II., on "Bacteriology," by Wm. W. Ford, is excellently concise, yet covers the ground most fully.

Chapter III., on "Pathology of the Reproductive Organs," by Elizabeth Hurdon, is more complete than any monograph on the subject which has yet appeared in the English language. It is also remarkable for the beauty of its illustrations.

Chapter IV., on "Medical Gynecology," by Chas. P. Noble and Brooke M. Anspach, is very practical and commendable, and yet is chiefly remarkable on showing how small a part pure medicine plays in purely gynecological affections.

Chapter V., on "Non-Plastic Operations of the Vulva and Vagina," by Anna M. Fullerton, includes inflammatory affections

of the vulva and vagina, traumata, ulcerative processes, hypertrophy, atrophy and tumors of the vulva, vaginismus, vaginal cysts and abscesses, and neoplasms of the vagina.

Chapter VI., by Noble, on "Plastic Operations on the Perineum, Vagina, and Cervix; Curettage of the Uterus, and Inversion of the Uterus," includes a discussion of the general principles involved in plastic operations, the technique of dilatation, curettage, trachelorrhaphy, cervical amputations, anterior colporrhaphy, perineorrhaphy, and operations for prolapse and inversion.

Chapter VII., by Edebohls, discusses the advisability of performing a number of gynecological operations at one sitting.

Chapter VIII., by G. L. Hunner, discusses "Diseases of the Bladder and Urethra."

Chapter IX., by Kelly, treats of "Vesical Fistulæ."

Chapters X., XI., XII., and XIII., by Noble, discuss the "Preparatory Treatment," the "After-Treatment," and the "Treatment of the Incision in Celiotomy Cases," and "Operations for Retrodisplacement and Prolapse of the Uterus."

Chapter XIV., on "Ovariectomy," is by A. J. C. Skene.

Chapter XV., on "Vaginal Section for Diseased Ovaries and Tubes," is by H. T. Byford.

Chapter XVI., on "Removal of the Uterine Appendage," is by J. Clarence Webster.

Chapter XVII., on "Abdominal Hysterectomy for Inflammation of the Uterine Appendages," is by J. M. Baldy.

Chapter XVIII., on "Vaginal Drainage for Pelvic Abscess," is by Kelly.

Chapters XIX. and XX., on "Abdominal Hysteromyomectomy" and "Vaginal Myomectomy," are by Noble.

Chapter XXI., on "Radical Abdominal Hysterectomy for Cancer of the Uterus," is by J. G. Clark.

Chapter XXII., on "The Byrne Method of Treatment of Carcinoma of the Uterus," is by X. O. Werder, and contains important suggestions of advance over the method so urgently advocated by Byrne.

Chapter XXIII., on "Vaginal Hysterectomy," is the last work of the late Fernand Henrotin.

Chapters XXIV. and XXV., on "Conservative Operations on the Ovaries and Tubes," and "Operations Before Puberty," are by Kelly.

AMERICAN PRACTICE OF SURGERY. A complete system of the Science and Art of Surgery, by Representative Surgeons of the United States and Canada. Editors, JOSEPH D. BRYANT, M.D., LL.D., and ALBERT H. BUCK, M.D., of New York City. Complete in eight volumes. Profusely illustrated. Volume III., pp. 775. New York: William Wood & Co., 1907.

The third volume of this series begins with an interesting chapter on poisoned wounds caused by the bites and stings of animals

and insects, by Chas. Field Mason, Surgeon, U. S. A. This is followed by a chapter on "Rabies," by George Gibier Rambaud, Director of the Pasteur Institute, New York. These small subjects fill only the first sixty pages, and the balance of the book, over 700 pages, is devoted to the very important divisions of the injuries and surgical diseases of bone and the diseases and injuries of joints.

These subjects are treated in a most comprehensive manner and with a remarkably high average of value in the contributions of the various authors. Duncan Eve of Nashville writes of fractures; T. Turner Thomas of Philadelphia of pseudoarthrosis; George A. Peters of Toronto of inflammatory affections of bone; Roswell Park of Buffalo of non-inflammatory affections of bone; Shelton Horsley of Richmond of syphilitic disease of bones; Channing C. Simmonds of Boston of tumors originating in bone; Charles F. Painter of Boston of chronic non-tuberculous and non-traumatic inflammations of joints; Alexander Primrose of Toronto of tuberculous disease of the bones and joints, and John Chadwick Oliver of Cincinnati of wounds of joints.

ELÉMENTS D'OBSTÉTRIQUE. Par le DR. V. WALLICH, Professeur Agrégé à la faculté de Médecine de Paris. 660 pages, with 88 illustrations. Paris: G. Steinheil, 1907.

This little volume is divided into four parts. The first treats of normal obstetrics, the second of pathological conditions, the third of operative measures, and the last is a so-called atlas. The subject is well condensed, and on the whole the opinions are sound. The book, however, is of little more value than a "quiz compend." The atlas is composed of 88 poorly executed illustrations, mostly from the older authors. E. M.

GINECOLOGIA. Vol. II., Part 4. M. A. FARGAS.

Part 4 of the second volume of this Spanish work discusses the inflammatory and neoplastic conditions of the uterine adnexa. The pathology, especially the microscopic, is described in great detail, and elucidated by numerous illustrations. The author is in favor of conservative measures in gonorrheal infections, limiting surgical intervention strictly to very chronic cases. The complicated knots, described in the technique of ovariectomy, used for ligation of the pedicle, have been generally abandoned. Foreign literature has been carefully studied.

UNTERSUCHUNGEN ÜBER DEN BAU DER MENSCHLICHEN TUBE ZUR KLÄRUNG DER DIVERTIKELFRAGE MITTELS MODELL-REKONSTRUKTION NACH BORN. DR. PAUL KROEMER, Privatdozent für Gynäkologie und Geburtshilfe an der Universität Giessen. Pages 31; 26 illustrations. Leipzig: S. Hirzel, 1906.

This short monograph describes the plastic reconstruction of a normal Fallopian tube of a multipara. Three diverticula were found, one with its opening pointing toward the uterus, and two

directed toward the ampullary end. From these findings it would appear that diverticula are not uncommon. The author concludes that as long as the ciliary action is unimpeded the descending ovum does not enter false passages, but that if inflammation or distortion interferes with the ciliary activity the ovum is likely to be arrested, and, if impregnated, will give rise to an ectopic pregnancy.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Epilepsy and Pregnancy.—Maximilian Neu (*Monatsschr. f. Geb. u. Gyn.*, July, 1907) records the case of a young servant of peculiar mental condition who became pregnant, and during pregnancy developed epilepsy. She had previously had signs of sexual perversity and petit mal. The attacks became so violent that she developed a status epilepticus and was taken to the hospital in a condition of coma, where, after having had twenty-six attacks in twenty-three hours, she died without regaining consciousness. No albumin was found in the urine; the attacks were typical of epilepsy, not of eclampsia, and there was little change in the pulse and no rise of temperature. The question is raised whether epilepsy was a result of the coming pregnancy, and the author finds little reason to believe that pregnancy can be a cause of epilepsy. He believes that an epileptic condition was present in his patient before pregnancy supervened. Possibly pregnancy was a sufficient source of irritation of an unstable nervous system to produce a fully developed epileptic condition in one previously affected only by petit mal. As a general thing pregnancy has no evil effect on epileptics. Neither do epileptic attacks interfere with pregnancy.

Absolute Indications for Widening of the Pelvis in Pregnancy.—C. J. Gauss (*Zent. f. Gyn.*, July 13, 1907) believes that widening of the pelvis by operation may be a prophylactic procedure of value when there is reason to believe that spontaneous delivery is impossible without it. The size of the child, strength of the contractions, and degree of pelvic contraction must all be considered in deciding whether birth can take place naturally. When there is danger to mother or child or both, a widening of the pelvis is indicated in order that labor may be terminated either by forceps or by version. It then loses its prophylactic quality, however. We must know the smallest dimensions of the pelvis that will allow of spontaneous delivery. It is impossible to learn the exact diameters of the pelvis except by precise measurements of the external pelvis. At Freiburg, careful measurements of the conjugates has been made in every case for two and one-half years. Of 230 preg-

nant women with contracted pelves, none having flat pelves with a conjugata vera of less than 7.25 cm., or having generally contracted pelves of less than 7.75 cm., had a mature child delivered spontaneously. We may then consider that spontaneous delivery is impossible with a conjugate of less than 7.25 to 7.75 cm., according to the variety of contraction. Below this limit widening of the pelvis is absolutely indicated. In such cases the operation may be done early as a prophylactic measure. The author goes a step further. It is well known that in primiparæ whose soft parts have never been stretched, the use of forceps after hebotomy may cause serious lesions of the soft parts. If we perform the operation before labor begins and allow of the healing of the wound before labor comes on, we need not dread infection by such tearing of the soft parts. Abortion does not result from the operative procedure. The operation should not be done earlier than the thirty-fifth week of pregnancy. We need not fear hemorrhage for the mother if we have a care not to rotate the legs outward during the operation. There is little danger of a renewed contraction of the pelvic ring taking place during the few weeks before delivery. The author records a successful case of prophylactic widening of the pelvis. Below the limit of 7.25 cm. conjugate down to 6.5 cm., widening of the pelvis is absolutely indicated, although Cesarean section may be used instead.

Face Presentations.—J. Thies (*Zent. f. Gyn.*, July 13, 1907) says that the maternal mortality in face presentations is one-half per cent., that of the children 13 to 17 per cent. The prognosis for spontaneous delivery is bad. The indication is to convert these cases into vertex presentations. This may be done by the combined method of Thorn. The inner hand seeks the occiput or a point to grasp upon the face, and pushes it backward, while the outer hand seeks to seize the shoulders and an assistant steadies the head. This maneuver is successful in a large proportion of cases. Delivery occurs in a half hour after the version in many instances. The child must be freely movable for the operation to succeed; and the cervix must be dilated sufficiently to admit half the hand. It must be done after the rupture of the membranes. This procedure is indicated when we have dilatation, rupture of membranes, weak pains and delayed delivery. The use of forceps would be dangerous for the mother, as well as for the child. This procedure may be made use of as a prophylactic measure, the correction of position being made early in labor. It is contraindicated in threatened uterine rupture, placenta previa, prolapse of the cord, and descent of the arm.

Indications for Operation for Increasing the Width of the Pelvis.—Menge (*Münch. med. Woch.*, July 23, 1907) gives precise indications for the different operations for delivering the child in contracted pelvis of various degree. In pelves with a conjugata

vera of 5.5 cm. and under, delivery through the pelvis is impossible. In such cases, whether the child is dead or alive, a Cesarean section can be the means of delivery. In such pelvises, if the child be dead, delivery may be accomplished by craniotomy. Unless the conjugate is at least 6.5 cm., with middle-sized children good results cannot be obtained by operations for widening the pelvis. In a pelvis whose diameter varies between 5.5 and 6.5 cm., with a living medium-sized child the relative indication is for Cesarean section. When hebotomy is done it is best to await a natural evolution of the delivery to obtain good results. The nearer we come to 6.5 cm. the better is the outcome. In pelvises with a conjugate of 6.5 to 7.5 cm. the best results are to be obtained by hebotomy in head presentations. In face, breech, and arm presentations Cesarean section is obligatory in the interest of the mother, or to secure rapid delivery of the child when the cord or small parts of the child have descended. Spontaneous delivery can occur only when the conjugata vera is over 7.5 cm. and when the child is of medium size and with the head presenting. Hebotomy is to be done only when it is certain that a spontaneous birth is not possible; that is, after the rupture of the membranes and the attempt of the head to mold to the pelvis. It is desirable to delay operation until the cervix is fully dilated. When the membranes have ruptured the operation should be done as soon as possible, since only the descent of the head will complete dilatation. With diameters over 7.5 cm. eighty per cent. of deliveries are spontaneous, without injury to the mother. With a diameter of over 7.5 cm. it is always advisable to attempt delivery by version or forceps. If it is too late to perform version, the membranes having ruptured, hebotomy is necessary in order to deliver a living child. With a medium-sized child the pressure of the head forcibly brought down is dangerous under 8 cm. Hebotomy is indicated in diameters of from 7.5 to 8 cm. with breech presentation, prolapsus of cord or limbs, or shoulder presentation. Hebotomy is to be done only when there is danger to mother or child. Between 6.5 and 7.5 cm. Cesarean section as an alternative to hebotomy has a great rôle. It is often necessary when delivery is possible by no other means. The aftercoming head is often brought down with difficulty even in pelvises with a conjugate between 7.8 and 8 cm.

Cesarean Section in Cases of Infection.—Veit (*Monatsschr. f. Geb. u. Gyn.*, July, 1907) describes the procedure to be undertaken in Cesarean section in cases of infection of the uterus. Here it is necessary to close the peritoneal cavity lest some infection should reach it from the fluids contained in the uterus, while under ordinary conditions the uterine contents are sterile. The incision is made in the abdominal wall as usual; the uterine wall is then sewn to the edges of the abdominal incision, and thus the peritoneal cavity is closed off before the incision is made that opens

the uterus itself. The operation is somewhat slower than the classical Cesarean section, but is without danger to mother or child. The author uses no drainage.

Pathogeny of Phlegmasia Alba Dolens.—M. G. Keim (*La Presse Médicale*, July 17, 1907) believes that there are cases of phlegmasia alba dolens that are not the result of infections from without. It may follow a perfectly normal puerperal state, and is rare in serious infections as well as in abortions, which are frequently accompanied by infection. After delivery coagulation may result from an abnormal blood condition due to imperfect function of the liver. During pregnancy these functions are altered and the blood becomes more coagulable than normal. There is an excess of fibrin. Injections of plain water or sublimate render coagulation easier. The treatment of this condition should aim to stimulate uterine contraction and increase the anticoagulating function of the liver. Intranterine douches should not be given, and all clots and placental remains should be removed. At the end of pregnancy intestinal affections aid in producing toxemia. There are internal coagulations in the abdominal veins from pressure, which after the traumatism of labor are propagated to the veins of the leg. Intestinal toxins act upon the liver again and lessen coagulating power. Practical deductions are that intestinal conditions should be carefully watched during pregnancy, constipation and enteritis treated at once, and intestinal lavage made with alkaline solutions and peroxide of hydrogen. The venous system is at the same time treated by giving hamamelis virginica and strychnine. After delivery the uterus should be carefully emptied and contraction hastened by hot vaginal douches and ergot.

Placental Retention After Abortion.—A. Bonnet-Labordière (*Jour. des Sci. Méd. de Lille*, August 17, 1907) divides the treatment of abortions in which it is impossible to ascertain positively whether the placenta and membranes have been entirely removed, into two heads, expectant treatment, and immediate operative treatment. Some accoucheurs, among whom is Tarnier, believe that by awaiting the evolution of nature the case may be finished without submitting the patient to a disagreeable operation. Others believe that such waiting exposes the patient to the great dangers of hemorrhage and infection. If a waiting policy is to be carried out, the patient should be in a hospital under constant supervision. She must also remain in bed for some time. Therefore the operative policy has many advocates. In many cases it is impossible to tell absolutely whether the whole secundines have been removed. The use of the curette will not decide the matter, since it is possible for a cotyledon of the placenta to remain hidden in a horn of the uterus. Again the curette may so mutilate the placenta and open the uterine vessels by tearing the mucous mem-

brane that infection is rendered easy. Severe hemorrhage may also follow curetting. The author inclines to the belief that the immediate removal of the placenta is the best policy.

GYNECOLOGY AND ABDOMINAL SURGERY.

Vaginal Lesions the Result of Coitus.—Heinrich Rotter (*Gyn. Rund.*, Bd. I., H. II., 1907) cites three cases observed by himself in which such severe lesions of the vagina occurred that the patient applied for treatment for hemorrhage. Serious infections may result from these injuries. Neugebauer has collected 157 cases from literature, 22 of which resulted fatally from septic processes or hemorrhage. Retroflexion of the uterus, senile involution, and coitus *a tergo* were responsible for most of the injuries. Exaggerated sexual feeling on the part of the woman, abstinence from coitus for a long time before the one causing the injury and violence on the part of the man were the immediate causes in most cases. In a few cases vaginismus was a factor in the injury.

Effects of Experimental Injections of Extract of the Corpus Luteum.—E. Ferroni (*Ann. di Ostet. e. Gin.*, May, 1907) has made a study of the effect of injections of a solution of the corpora lutea of the ovary of non-pregnant females into animals. He also extracted the ovarian substance without any corpora lutea in it and injected this alone, as a control series of experiments. The corpora lutea used were from healthy cows. The author at first established the lethal dose of extract of corpora lutea. The immediate results of the injections were profound depression alternated with short periods of excitement. Permanent depression followed, with dyspnea, aversion to food, scanty urine and diarrhea. In the abdomen there were found residua of the ovaries, with hyperemia of the intestines. The spleen was congested, and the kidneys were in a condition of acute nephritis. In the injections of ovarian tissue alone none of these symptoms were observed. The author then estimated the metabolism of the animals which had received the injections in terms of nitrogen. The metabolic changes were reduced in amount, and the author believes this was not due to inanition. He also estimated the effects of injections of the other internal organs, such as liver, spleen, and thyroid gland. He found no important effects except from thyroid extract, in which the effects were much the same as with extract of corpus luteum. The author believes that the function of the corpus luteum is cyclic and that this tissue should be further studied.

Primary Double Papillary Tumor of the Fallopian Tubes.—M. Danel (*Jour. des Sci. Méd. de Lille*, August 10, 1907) says that primary epithelial neoplasms of the tubes are not very common. Recurrences after some months when apparent cure has taken

place shows how reserved should be the prognosis in such cases. The author has observed four such cases in the last seven years. He illustrates the subject by presenting the case of a woman who had had only one normal pregnancy, and no marked tubal catarrh, in whom an abdominal operation was performed for enlargement of the tubes on both sides. The operation was apparently successful for some eight months, when the patient appeared with a generalized papillary growth affecting the pelvic cavity, peritoneum, and intestine. The histological examination of such primary growths gives very few data for an accurate diagnosis between malignant and benign growths, while the macroscopic appearances are almost identical. The originally benign growth, which could not be entirely removed, may have undergone malignant degeneration. These tumors should be classed among those of very uncertain prognosis.

Cysts of the Ovary.—O. Laurent (*Rév. Médico-Sociale*, June 25, 1907) says that the complexity of the ovarian structure gives rise to many varieties of tumors. The dominant form is the cyst. This may be dermoid or mucoid. The dermoid cyst results from an inclusion of the intrablastoderm; the parovarian cyst comes from the remains of the Wolffian bodies or accessory ovaries. Mucoid cysts may be very large; they are dark in color, covered with enlarged veins; they are unilocular or multilocular and contain a serous fluid, with mucoid flocculi. Paralbumin is constant in these cysts. They may be sessile or pedunculated. The tube may be adherent to the cyst and give a double cord. The cysts may be between the layers of the broad ligament, or retroperitoneal. If they are vegetating, the epithelium lining the cysts proliferates markedly, forming granular or villous projections into the cyst cavity. Rupture of vegetating cysts causes peritoneal grafted cysts, or pseudomyxedema of the peritoneum. There may be sarcomatous or epitheliomatous degeneration. If non-vegetating, the lining is cylindrical, ciliated, or mucous epithelium in a single layer. The dermoid cyst contains sebum and hair, and its wall may contain teeth fixed to a rudimentary jawbone. These cysts are teratomata. The theories of pathogenesis are two: ectodermic inclusion and parthenogenesis. Parovarian cysts arise from debris of the Wolffian body. Cysts occur at from 20 to 75 years of age. There is a period of latency characterized by vague pains, weight, and pelvic neuralgia. A pelvic tumor follows this. The duration is from two to three years. Ascites indicates cancerous degeneration. Complications are adhesions, ascites, inflammation, torsion of the pedicle, intracystic apoplexy, and rupture of the cyst. The treatment is removal.

Tubal False Pregnancies.—R. Pichevin (*Prog. Méd.*, June 29, 1907) contends that other pelvic conditions, especially salpingitis, simulate tubal pregnancy and render the diagnosis ex-

ceedingly difficult. We make the diagnosis of tubal pregnancy when, after non-appearance of the menses, there occurs a sudden attack of pain in the abdomen with hemorrhage from the vagina. The author describes two cases with symptoms that might lead to the diagnosis of tubal pregnancy, occurring in young women, in whom the classical symptoms of tubal abortion appeared. In such cases the uterus is not very large, but may be somewhat so, especially when parenchymatous metritis exists. In some cases it is crowded upward and forward as by a pyosalpinx. Again, a uterus in a normal position is not freely movable. In Douglas' cul-de-sac is felt a resistant, elastic tumor. There is neither nausea nor vomiting, and there is at the time of the pain and hemorrhage no syncope or coldness of the extremities, and the face is not pale. It is found that the patient has felt hot rather than cold, and the taking of the temperature reveals a moderate rise of temperature for several days. The tumor in the cul-de-sac resembles hematocele. Generally the uterus has an elastic mass behind it. Sometimes it may be felt that there are two adnexal masses. The elevation of temperature arises from the eruption of a small amount of septic material into the Douglas' cul-de-sac which produces a reaction. Exact diagnosis depends on the finding of a lateral mass, tender to touch, accompanied by a rise of temperature. A small ovarian tumor which has become twisted, and is coexistent with a pregnancy will give the same symptoms.

Genital Prolapse.—E. Deanglade (*Ann. de Gyn. et d'Obst.*, June, 1907) says that the cause of prolapsus is the weakening of the pelvic floor combined with the stretching of the ligaments. The object of treatment is to relieve the complications due to the lesions produced in the pelvic organs and those that result from general malnutrition and nervous conditions. The circulation of the uterus, ovaries, and tubes is interfered with, while the organs are submitted to numerous irritations from without; the cervix becomes ulcerated and hypertrophied. Histological examination shows the microscopic lesions of metritis which may be propagated to the adnexa. When adhesions occur the prolapsus becomes irreducible. Troubles of micturition, cystocele, and calculus may occur, as well as kidney diseases. General symptoms are of the order of neurasthenia. The author believes that prolapsus occurs only in those persons who are predisposed to it. In such persons there may be deformities of different kinds. The immediate causes are conditions that favor relaxation of the pelvic floor, such as labor, especially if frequently repeated. The author does not believe that tearing of the perineum is of as much importance as has been supposed, but that this is the secondary, not the primary lesion, since prolapsus exists in nulliparæ in whom the perineum has never been torn. In some subjects there is a failure of general nutrition, as in rachitic subjects, combined with increased abdominal pressure, from increased weight or effort. In general prolapsus is insidious in appearance. As to therapeutic measures

for the correction of prolapse, pessaries are discarded by the author as only palliative, and massage as not generally useful. Injections of paraffine and of quinine have been proposed, but are of little value. The author rejects the Alexander operation as giving no permanent results. Abdominal hysteropexy does not give lasting results, and may produce complications should labor occur. Shortening of the uterosacral ligaments, to be of value, must be supplemented by perineorrhaphy and shortening of the round ligaments. Abdominal hysterectomy is in most cases a more severe operation than is necessary. Anterior colporrhaphy is useless without perineorrhaphy. Amputation of the cervix is unnecessary since its increased length is a result, not a cause of prolapsus. Vaginal hysterectomy is to be used only under particular conditions when there are lesions of the uterus that demand its removal, such as fibroids. The author has employed with success a new procedure that originated in France. It consists of a resection of nearly all of the vagina and the exclusion of the uterus, which is crowded backward behind the line of sutures into the pelvic cavity. The uterus is then supported by a cicatricial column. A large lozenge is cut from the vaginal tissue with its long axis directed toward the meatus and perineum. The enclosed mucous membrane is then dissected out and extirpated. The operation is short, simple, and successful. There remains a vaginal cul-de-sac about three centimeters deep. The only disadvantage is the impossibility of sexual intercourse, hence the operation is appropriate only in old women. The exclusion of a mucous cavity within the pelvic cavity has not the disadvantage that might be expected, since the organ becomes atrophied. If necessary the uterus may be curetted first. Anterior myorrhaphy is a useful operation which leaves a firm pelvic diaphragm, which does not permit of cystocele or rectocele and leaves the uterus high up and in a condition of normal anteversion.

Non-Infectious Pathological Processes in the Female Pelvis.

—J. A. Doléris and H. Rouland (*Ann. de Gyn. et d'Obst.*, July, 1907) say that not all adnexal inflammations are of infectious origin. There is a subacute type which has no relation to the infectious forms. Simple catarrhal salpingitis and hydrosalpinx, as well as ovarian and parametrial inflammations may be of this character. The cause is hereditary or acquired predisposition, which leads to a deviation of structure. Excessive hyperemia and sclerotic degeneration cause pain, hypertrophy, and hydrops. Blood cysts are thus produced. The immediate cause is obscure; they are the result of degenerations, neuropathy, or hereditary syphilis. They are lesions of mechanical hypostasis. Exudative or adhesive inflammations affect the peritoneum and produce primary alterations of the adnexa. Thus there arise peritubal periovarian and tuboovarian adhesions which become converted into organized plastic cords, cellular bridges, and filaments. They occur in

healthy multiparæ and in virgins, and result in sterility. Nothing is easier than to establish the difference of etiology between these and infectious processes by examination of the secretions. The habitual cause is a vascular traumatism in which excessive hyperemia is the direct factor in producing the flow. The authors have, by experiments on animals, established the results of these processes. They have produced permanent adhesions agglutinating the organs by causing aseptic injuries of these organs in rabbits. These are the persistent remains of coagulated blood, and last for some time. They produce deformities, deviations, ectopy, compression, and abnormal fixation of the tubes, ovaries, and uterus. Obliteration of the tubes is frequent, as well as sactosalpinx. There probably exists a normal tubal secretion which may accumulate and form a cyst in an occluded tube. The abundance of this exudation has been demonstrated in animals by the authors. The tubes have been shown to become rapidly thinned by distention, the epithelium flattened, and the muscular fibers dissociated.

Why Must the Appendix Be Removed in Gynecological Operations?—Pankow (*Münch. med. Woch.*, July 22, 1907) discusses the necessity of a routine removal of the appendix whenever the abdomen is opened for a gynecological operation. The author has made systematic histological examination of the appendices removed from patients operated upon for gynecological lesions in 150 cases. He finds that the appendix is affected more often in the female than in the male, and that lesions occur in 60 per cent. of gynecological cases. Appendicitis plays a much wider rôle in gynecological cases than has been supposed. It is frequently the cause of closure of the tube and resulting sterility. Many cases of pain in the right side referred to the ovary result from appendicitis. The inflammation of the appendix is frequently unobserved by the patient, yet it leaves its marks behind in adhesions, and chronic inflammatory conditions. Hence the author believes that when we have opened the abdomen for another operation we should at the same time remove the appendix.

Indications for, and Results of, Bier's Method of Treatment.—H. Duclaux (*Le Prog. Méd.*, July 15, 1907) says that this treatment is of two kinds, giving active hyperemia produced by local applications of heat, and passive, or venous hyperemia, produced by the withdrawal of air in a closed apparatus, or by enclosing the limb in a rubber band, that should not be too tight or kept on too long. It should not produce pain, anesthesia, or coldness of the limb, but simple, moderate edema. The band remains in place from three-quarters of an hour to an hour for acute affections and 20 to 22 hours for the chronic ones. The edema results from dilatation of the veins, and it is claimed that it has bactericidal properties, is antitoxic, and improves the nutrition of the tissues. According to Bier it is the best treatment, used entirely alone, for

tuberculosis of the joints. An early mobilization of the joint is permitted, and normal motion soon returns. A speculum has been devised by Ferguson in which air can be exhausted, and thus good results are claimed in metritis and dysmenorrhea. These good results are not confirmed by all observers, and in France it is believed that some of them are still to be proven. There have been produced sensory complications, vascular troubles, chronic edemas, and consecutive infections, such as lymphangitis, erysipelas, adenitis, and fistulæ from tubercular processes that had been closed heretofore. At the same time it is of great value in gonorrheal arthritis, in hydrarthrosis, and some articular inflammatory processes. Great prudence is necessary in the use of the method and it is of most value in early cases.

Scopolamin and Spinal Anesthesia in Gynecological Operations.—Gustav Klein (*Zent. f. Gyn.*, July 6, 1907) says that most of the statistics of results of anesthesia take no account of the deaths that occur from two to six days after the narcosis, from shock, from pneumonia, and from ether bronchitis. Chloroform acts on a degenerated heart muscle as well as on the muscles of the general system and the central nervous system. In anemic and cachectic persons the sleep obtained by scopolamin is most useful for operations of moderate intensity. Also in cases where ether narcosis is contraindicated scopolamin narcosis is of value to permit operations that could not otherwise be done at all. Scopolamin and spinal anesthesia are indicated in combination with chloroform or ether in some cases where less of the anesthetic can be given through their aid. Spinal anesthesia alone may be used in operations on the perineum, vagina, and vulva, as well as in celiotomy when no great pulling or tearing of the organs will be necessary, or there are no tumors of uterus or adnexa. In nervous patients spinal anesthesia combined with scopolamin is most useful for all slight operations where it is not desirable for the patient to be at all conscious of her surroundings. When there is necessary pulling on the uterus or adnexa or total vaginal extirpation of either or these organs, and in abdominal operations with strongly adherent adnexa inhalation narcosis becomes necessary, but by the use of scopolamin combined with spinal anesthesia very little of the general anesthetic need be given. In the cases treated by the author no bad effects followed the use of these combinations.

The Uterine Endoscope.—Ch. David (*La Tribune Médicale*, July 18, 1907) has adapted an instrument for the visual inspection of the interior of the uterus, using the principle of the urethro-scope of Luys. It consists of a tube with an apparatus for lighting it, and end tubes of various shapes for examination of different portions of the uterine canal. The tube is closed at the uterine end by glass and the end is removable and can be cleaned and sterilized. The outside of the tube is graduated in centimeters so as to tell how far it has entered. The genitals are carefully

disinfected and dilated as much as is needed. The introduction of the tube gives no pain to the patient and is easy for the operator. Diagnosis is aided by this procedure and indications for treatment are given that cannot be reached otherwise. It is indicated in all conditions of the uterine canal where an exact diagnosis cannot be arrived at by other means, such as chronic metritis, tumors and placental remains after labor or abortion. It enables local treatment to be applied accurately, and the result of operations to be seen. It is contraindicated in marked displacements that are irreducible and fixed; in periuterine lesions, and acute pelvic peritonitis. The author has used it in about twenty cases with success.

Use of Nucleinic Acid in Laparotomy.—Delassus (*Jour. des Sci. de Lille*, August 3, 1907) gives an account of the use of nucleinic acid in a series of twelve cases of laparotomy done for various causes, and says that the procedure is of use, although he does not employ it as a routine measure in all laparotomies on account of certain inconveniences of its use. All of the cases recovered and some had abscesses at the site of the injections, although none of the patients had symptoms of peritonitis. It is used to increase the resistance of the peritoneum by giving an injection 15 hours before operation. The writer used one gram of the powdered acid dissolved in alkaline water and injected under the skin. It causes considerable pain and lessens the sleep of the patient, thus making her unfit for operation in some cases. The use of cocaine with it is of advantage. The temperature rises and the pulse is generally increased. The color of the peritoneum is not changed. The drug has no bad effect on the kidneys.

Albuminuria in the Course of Uterine Fibroids.—A. Venot (*Rév. Fran. de Méd. et de Chir.*, August 10, 1907) says that albuminuria may coexist with fibroids in the uterus. The amount is very variable, from traces to a large proportion being present. When it is abundant the urine is lessened in quantity. Most fibroid cases that die after operation succumb as a result of kidney complications. In successful cases the albumin disappears promptly from the urine after operation. On the other hand, some recover with persistent albuminuria. Three groups of cases may be distinguished. In the first the kidney condition is independent of the fibroid, and the result of preexisting nephritis from other causes. In these cases the operation will hasten the progress of the nephritis and albuminuria will persist after it. In the second group the fibroma causes the renal lesion or aggravates an existing nephritis. Here removal of the tumor will be followed by an amelioration of the kidney trouble. The third group includes the cases in which the fibroma causes the persistent or transient renal lesion and the resulting albuminuria. These are the most interesting types as well as the most frequent. The tumor compresses the ureter and produces congestion of the kidney. When pressure is relieved the albumin disappears. Such a kidney may become

sclerotic, but this generally takes place very slowly. In cases of true nephritis operation is contraindicated. If the condition is somewhat acute, with fever and much albumin, it is generally due to compression, and operation is urgently demanded to relieve the pressure of the tumor on the ureter.

Syphilitic Metrorrhagia.—A. A. Muratow (*Zent. f. Gyn.*, July 6, 1907) describes two cases of obstinate uterine bleeding which resisted all treatment until mercury was administered, when they recovered. The author believes that syphilitic conditions of the uterus are more frequent than is generally believed. There is very little available literature on this subject, and no autopsies on such cases have been recorded. In all probability the condition of the uterus is similar to that found in syphilitic affections of the stomach in which hemorrhage occurs. Here the mucous membrane is affected, and especially the bloodvessels, and erosions and ulcerations of the surface occur with erosions of bloodvessels that perforate and allow of hemorrhage. There are no specific symptoms of such metrorrhagia, there being no cachexia, and the uterus being an organ from which bleeding is easily tolerated. Such bleeding has been observed in young maidens the subjects of inherited syphilis, and in the puerperal state in women who suffered from syphilis. Hemophilia has even been suspected, so profuse and persistent was the bleeding. Cystic ovaritis has resulted in some cases. In all cases of obstinate bleeding from the uterus without clear etiological elements it is desirable to inquire carefully for a syphilitic history in the patient, her husband, or her parents, and make use of syphilitic treatment before giving up the treatment of the case to operative procedure. Most of these patients have gone the rounds of specialists and had all sorts of treatment without any benefit, but are promptly relieved by mercury and iodides.

Indications and Operative Procedures for the Treatment of Hematometra.—Pierre Sikora (*La Presse Méd.*, August 10, 1907) says that the external os is generally the seat of the obliteration of the uterine canal that causes hematometra. It may be congenital or acquired. In the latter case the occlusion is by the formation of fibrous tissue or adhesion of the mucous surfaces. Congenital atresia is much less frequent. The causes of acquired atresia are labor, gangrene, ulcerations, cauterization, tumors in the uterus, and uterine prolapse. It is most common after fifty years of age. The contraction may occur at the external os, when the entire uterus is dilated; at the internal os, when only the body and perhaps the tubes are dilated; at some other point, as in the congenital form. The method of operation in doubtful cases should include a laparotomy, which will aid in diagnosis. The uterus may be single or didelphous. If the cavity be single, the collection easily accessible, and the uterus healthy, operation by way of the vagina is indicated. If congenital, it is sufficient to puncture, drain slowly, and suture the edges of the opening to

the vaginal walls so as to keep it open. If acquired, the normal cervical opening should be slowly dilated or punctured at the nearest possible point to the os. When the body alone is dilated, one should dilate the cervix with laminaria tents, introduce a sound, or puncture the internal os, wash out, drain, and curette. If situated in a rudimentary horn, or if there is a hematosalpinx, laparotomy is indicated. Rupture of the dilated tube is to be feared. If there is a uterine tumor, a fibroid, or a malignant tumor, the extent and nature of the tumor will dictate the treatment. In a uterus didelphys a conservative operation is indicated and its selection depends on the degree of deformity. In all cases conservatism should dictate the operative procedures. If the uterus is diseased it should be removed or if the adnexa are badly dilated.

The Menopause in Thyroid Cases.—Ch. Vinay (*Le Bull. Méd.*, August 24, 1907) says that although normally the menopause is accompanied by atrophy of the thyroid gland, in some cases an increase of size takes place instead, and we have manifested the symptoms of Basedow's disease. The ovarian function seems to be supplemented by the thyroid gland. The gland hypertrophies during pregnancy, and atrophies at the menopause, and the greater frequency of Basedow's disease in women is an argument for the antagonism of the thyroid and the ovarian secretions in their influence on the genital organs. Goiter seldom occurs as a new disease after the establishment of the menopause, though it frequently occurs for the first time at the menopause. The condition of the genital organs, especially the ovary, has a marked effect on the appearance, development and prognosis of exophthalmic goiter. The most common factors in the production of this disease are the overfeeding, the emotions, and the anxieties of this period, and many of the symptoms are of nervous character. Mild forms of the disease may be accounted for by the removal of the ovaries or their atrophy. The thyroid theory of this disease is that the hyperthyroidization results from excess of internal secretion of the gland. Heredity is a factor in this form of goiter, as is genital change at any period, whether it be the climacteric or pregnancy. There may appear simply a change of character, agitation, a fixed look, insomnia, tachycardia, and trembling, with very little enlargement of the gland. All these symptoms appear in crises. There is a certain relation among the different forms of goiter; pregnancy produces the simple form, while the menopause causes the ophthalmic form. In general this form is not extremely grave, but yields to treatment, which should not be by means of thyroid extract, but of ovarine, which gives much better results.

Kocher's Work in Abdominal Surgery.—Alexis Thomson (*Edinb. Med. Jour.*, Sept.), in a brilliant résumé of the work of this surgeon, abstracted from the fifth edition of Kocher's "Oper-

ationslehre," says: It is in the field of abdominal surgery that the operating surgeon now achieves the most brilliant results from his labors. In marked contrast with the former fear of opening the peritoneal cavity on account of infection, we now know that the healthy peritoneum possesses a greater tolerance for infection than the majority of the other tissues of the body. In order to be successful in the practice of abdominal surgery, the following points must be attended to. In the preparation of the patient the stomach and intestine must be emptied two days before the operation, and kept empty, and the blood pressure improved by the introduction of salt solution. It is held to be a mistake to give laxatives the day before, and still more on the morning of the operation, because one is then operating in a period when the number of bacteria in the intestine is increased, such increase being an invariable accompaniment of diarrhea. The bowel should be emptied two days before, while for twenty-four hours before the operation small doses of bismuth are given in order to diminish the formation of gas. In operations in the lower part of the abdomen and pelvis the lower part of the trunk is to be raised, while in operations on the stomach and liver the epigastric portion should be elevated. In all cases in which it is impossible to bring the affected organ outside the wound, as is so readily done in the case of the appendix and in ovarian tumors, the incision must be large enough to afford free access to the organ with the object of rendering it movable, and during these manipulations the surrounding parts of the peritoneal cavity must be suitably protected. As soon as the abdomen is opened, the healthy areas of the peritoneal cavity and the healthy organs must be shut off by packing with abundant gauze wrung out of hot salt solution. The peritoneum must sustain the minimum of damage, and must not be irritated by antiseptics or have its vitality lowered by cooling or drying, and therefore all exposed peritoneal surfaces must be kept moist with gauze wrung out of salt solution. All areas of infection must be removed, or, where this is impossible, must be opened into and packed with zeroform gauze, iodoform being regarded as too poisonous for this purpose. Any collection of blood or wound secretion is to be avoided by the arrest of every bleeding point, and the covering over of raw surfaces by suturing the peritoneum over them. The wound in the abdominal wall must be completely and reliably closed except at the point of emergence of the drain, where this is employed, and if gauze packing has been inserted it should be surrounded by guttapercha tissue—the "cigarette-drain" of M'Cosh.

In the after-treatment attempts should be made to secure free respiratory movements, and if these are restrained by pain, morphine should not be withheld. Attempts also should be made to encourage peristalsis and favor the escape of intestinal gases, while at the same time the blood pressure is maintained by the

introduction of salt solution in abundance by one or other of the approved routes.

The question of *hernia after abdominal operations* is intimately connected with that of asepsis and the materials employed for suture. He who is not sure of his asepsis is obliged to use catgut for buried sutures. Kocher asks, "How can people go on using catgut for suturing the wall of the abdomen, when Madelung has recorded over a hundred cases where the wound has burst open because of it?" For the union of layers of fascia, aponeurosis, or muscle, the suture material must not be absorbable, and must therefore consist of silk boiled in corrosive sublimate.

In the planning of *incisions in the abdominal wall*, it is essential that the nerve supply of the muscles should not be interfered with; incisions made at the outer border of the rectus are very liable to interfere with its nerve supply and result in atrophy of the muscle. If the incision must be made near the middle line, it should be carried through the sheath of the rectus, the uninjured muscle is then displaced bodily outwards; when the operation is completed, the peritoneum and posterior sheath of the muscle are stitched in one layer, the rectus is brought into place and fixed in the middle line, and finally the anterior layer of the sheath is sutured. Where necessary, one need not hesitate, however, to cut the rectus across, because its different segments are innervated separately. In all lateral incisions the muscles must be separated in the line of their fibers, so as to avoid injury of their nerves.

The most important *complications after abdominal operations* are paralysis of the stomach and intestine, pneumonia, peritonitis, thrombosis, and embolism of abdominal bloodvessels, and hemorrhage from the stomach and intestine.

Acute dilatation of the stomach becomes dangerous if it is not at once recognized, and the viscus emptied with the tube.

Paralytic distension of the bowels is very common, and is partly due, in the first instance at any rate, to the arrest of the passage of flatus, while later it is due to disturbances of the circulation in the wall of the bowel and stagnation and decomposition of the contents. Kocher has obtained "wonderful" results from the administration of physostigmin for promoting the return of peristalsis. The stagnation and decomposition of bowel contents must be remedied by injections and irrigations of the bowel from below, and when the tract is cleared by the administration of laxatives by the mouth. Lung complications occur most frequently after laparotomies in the upper half of the abdomen, probably because of the disturbance of respiration through the pain caused by contraction of the diaphragm. He distinguishes three forms—the inhalation pneumonia, the hypostatic, and the infective—and he gives directions how these may be best prevented. Hemorrhages from the stomach and intestine are possibly due to retrograde em-

bolism from the veins, and he thinks it important to avoid anything which will disturb the circulation in the bowels during the operation, as by squeezing and clamping, and in resections employing segments of bowel whose vitality has been lowered. Parts of the intestine or omentum the vitality of which is at all open to suspicion, should be removed. The measures to be employed in operating in the presence of peritonitis are more appropriately discussed in relation to appendicitis.

In *abdominal tuberculosis* the object of a laparotomy is not only to get rid of the exudate but to discover the source of the disease, and if possible remove this, as may be done when it arises in the tubes, in the intestine, or in the appendix. An extensive incision is made in the middle line, the fluid drained off, and the peritoneal cavity thoroughly irrigated with salt solution, especial care being taken that no additional infection is introduced, as thereby the whole complexion of the case may be altered; for the same reason it is better to avoid drainage. In cases in which the primary seat of the tuberculosis has been removed, and it has been necessary to pack, iodoform gauze wrung out of 5 per cent. carbolic lotion should be employed wrapped up in guttapercha tissue; when this packing is removed, iodoform glycerine should be inserted in its place.

In the chapters on "Hernia" there is little that is new, but it is interesting to find that, with increased experience, Kocher believes that in the *radical cure of inguinal hernia* his method gives the best final results. He affirms that in his own clinic it has been found to yield 97.7 per cent. of cures. With regard to Bassini's method, he regards the free exposure of the inguinal canal by dividing the external oblique aponeurosis as the most important part of the operation, and he therefore employs it in all complicated hernias, but he regards the deep suture of the walls of the canal as unnecessary. The invagination and displacement of the neck of the sac is the essential part of his own operation, and is to be employed whenever possible. Where invagination is not practicable on account of the condition of the sac, the lateral displacement alone is found to be reliable. In closing the canal he merely invaginates the yielding anterior wall by a series of sutures, and does not stitch the deeper parts.

Bad results are stated to be due to failure in asepsis and the use of catgut. In *very large hernias*, in which difficulties are met with due to adhesions and to insufficiency of room within the abdomen for the protruded viscera, one is better to abstain from operation unless one is forced to it by threatenings of strangulation, as the operation may be complicated by the necessity of performing entero-anastomosis or a resection, and the large opening in the abdomen may require to be closed by means of flaps such as one taken from the rectus, and it may be further advisable

to remove the testis. The radical operation for *femoral hernia* has yielded only 71.6 per cent. of radical cures, and yet Kocher appears to be satisfied by the invagination and displacement method, with the addition that Poupart's ligament is tacked down to the pectoneal fascia. He does not appear to favor Roux' method, nor does he appear to be aware of the admirable method introduced by Battle. In operating for large *umbilical hernias*, he lays stress on the danger of thrombosis of the veins of the omentum and mesentery, and advises rather the retention of portions of adherent sac upon the omentum or intestine than any attempt to remove the adherent sac completely. He does not appear to have any knowledge of the overlapping method described by Mayo.

In introducing the surgery of the *gall-bladder and bile ducts*, Kocher explains that while his experience may not be so extensive as that of Kehr, of Robson, or of Mayo, his mortality is less than any one of these, so that he feels justified in recommending those methods of operation which he himself has tested. With regard to the incision employed, while no single one will suffice for all cases, he gives the preference to his own oblique incision, which commences at the apex of the ensiform cartilage and runs downwards two fingers' breadth below and parallel with the costal margin, lower down tending further from the costal margin, and terminates over the convexity of the abdominal muscles; the rectus is cut across in its whole breadth, while the nerves passing to it are drawn aside. Access is still better with the angular incision of Czerny, one limb of which extends from the ensiform to the umbilicus, while the other passes out at right angles to this, dividing the rectus completely but sparing its nerves; he has found that Mayo Robson's incision does not give quite so good access as either of these. After referring to the projection of the lower thorax by a large sandbag, and the rotation of the liver upon itself, he regards the method which he introduced of mobilizing the duodenum as capable of rendering great service in operations upon the bile ducts. In exceptional cases, more room may be obtained by breaking the seventh and eighth cartilages at their junction with the ribs in order to raise the costal margin sufficiently. In discussing operations upon the gall-bladder, he expresses decided opinions on the merits of what has been called ideal cholecystotomy. He has never seen any trouble following it; it assures the most rapid healing and the least trouble from adhesions. It must be performed only in suitable cases when the biliary passages are free, when there are no marked inflammatory changes in the wall of the gall-bladder, and when there are no changes in the cystic duct associated with an impacted stone. If these conditions be excluded, the ideal operation is a simple and valuable one, and especially suitable in early cases of cholelithiasis. It has usually been objected to by other

surgeons because it does not afford the free drainage which cholecystostomy provides, but Kocher maintains that when the inflammatory products of the gall-bladder are catarrhal in character the natural drainage into the intestine is quite sufficient.

The technique in *cholecystostomy* does not call for special mention; it may be noted, however, that the water-tight fixation of the drain tube in the gall-bladder devised by Poppert is an important addition to our technique, as it enables us to dispense altogether with the attachment of the gall-bladder to the parietal peritoneum. In discussing *cholecystectomy*, he describes himself as not among those who regard the gall-bladder as of as little importance as the appendix, and he enters a protest against the routine practice of removing the gall-bladder in all cases of cholelithiasis. His argument is shortly as follows: If stones reform at some future time, which is quite possible, the operative treatment therefor is rendered much more difficult, and is attended with greater danger. Moreover, the removal of a thickened and adherent gall-bladder is often a difficult operation, having a distinct mortality—a little over 3 per cent. in the best hands—and, further, being attended with hemorrhage, is more liable to be followed by adhesions and after-trouble from these. He regards the following as indications for the removal of the gall-bladder. In malignant disease or well-founded suspicion of the same; when there are marked inflammatory changes in the gall-bladder, whether of the acute variety corresponding to those in acute appendicitis, or of the chronic type associated with thickening and contraction or distension in the form of empyema or hydrops; also in chronic thickening of the cystic duct, for the obvious reason that unless the cystic duct is permeable the function of the gall-bladder is lost. At the same time he agrees with Mayo Robson that the duct may appear obstructed at the time of the operation, and yet at the end of it, or a few hours or days later, it may again become permeable. In performing cholecystectomy, when it is possible he divides the cystic duct and artery in the first instance, and then shells out the bladder from its bed, but if the access to the duct is not good it is better to split the peritoneum over the fundus in the first instance. If a cholecystectomy is intended and it is impossible to be certain of the condition of the biliary passages, or if these are known to be diseased, the gall-bladder is laid open throughout from an opening in the fundus through the cystic duct as far as its junction with the hepatic, a drainage tube being inserted into the hepatic duct and retained there by suture. As a rule, however, he thinks it better, if possible, to preserve the gall-bladder, and perform a cholecystostomy at the same time as the hepatic duct is drained. When it is proposed to make a communication between the gall-bladder and the intestine, he thinks the duodenum is the portion to be preferred, and the anastomosis is rendered

easier if the duodenum be mobilized. In performing the operation—cholecystenterostomy—the gall-bladder is opened at the fundus and emptied, and, having made certain that the cystic duct is patent, a lateral anastomosis is effected between the gall-bladder and the duodenum, while the opening made in the fundus is made use of for drainage by means of a tube inserted in a water-tight manner, the object being to divert the bile externally until the anastomosis is soundly healed. In discussing the relative merits of an internal and external biliary fistula, he thinks that in much reduced individuals an external fistula should be preferred as being the simpler, and if the contents of the bladder are infective, especially when there is suppuration, it is much more satisfactory to provide for their escape externally.

The various operations upon the common duct have been rendered easier by the mobilization of the duodenum; in the very difficult cases with extensive adhesions the access to the common duct is rendered easier by splitting the gall-bladder and cystic duct down to the junction of the latter with hepatic duct, and, having dealt with the common duct, the gall-bladder is afterwards removed. Unless there is an accumulation of infective secretion in the duct above, he prefers to close the wound in the common duct by suture, provided the entrance into the duodenum is patent; if, on the other hand, there is an accumulation of infective secretion, he inserts a drain into the hepatic duct, and closes the remainder of the wound in the common duct by means of sutures. Another alternative is to open the gall-bladder and pass the drainage tube into the hepatic duct through the cystic duct. With regard to the question of crushing stones *in situ*, he thinks the procedure quite a good one when the stones are soft enough to permit of it.

Access to the hepatic duct is often difficult, and it is here that the extensive angular incision may be required, and it may also be necessary to break the cartilages at their junction with the ribs. Further, if the access is rendered very difficult by the presence of adhesions, one may reach it most certainly by splitting the gall-bladder and cystic duct throughout their whole extent.

Under the heading of "Hepato-Cholangiostomy" he describes the opening of the dilated bile ducts which project upon the surface of the liver in cases of biliary obstruction. By cutting down on these and incising them, an outlet for the bile may be afforded until the obstruction relieves itself, or is relieved by a second operation. In the surgical treatment of cirrhosis, the opinion is expressed that the Talma operation has established itself as one of great value; in performing it the omentum should be dealt with in the first instance, but when the fixation of the omentum has failed or is not practicable, the spleen should be drawn out and fixed in a pocket between the parietal peritoneum

and the muscles. Considerable benefit also has resulted in cases of hepatic cirrhosis attended with jaundice, by performing cholecystostomy at the same time, and draining away the bile externally. In operating for ascites, the fluid in the peritoneum should be drained away by means of tubes for twenty-four or forty-eight hours, but the prolonged use of tubes is to be avoided, as it is inevitably followed by infection—a statement which we can confirm from our own experience.

There is little that is noteworthy in the description of the other operations upon the liver, and the same may be said with regard to those on the spleen; in operations upon the pancreas, the mobilization of the duodenum is again referred to as greatly improving the access in difficult cases. A great deal of space is devoted to the surgery of the stomach, and it is pointed out that it is a matter for congratulation that practitioners are coming to recognize more and more that a large proportion of stomach affections can only be cured by surgical means. The operation of gastroenterostomy is referred to as having rendered invaluable service, and the technique is so improved that there is no danger in the operation itself nowadays, but only in the accompanying complications. It is held as proved that the entrance of bile into the stomach does not cause disturbance so long as the outflow from the stomach is quite free. If the method of operation secures a certain outflow, then it does not matter whether the union is made in front of or behind the transverse colon. It is more important that the opening should be made at a point in the stomach where it will be emptied with the greatest certainty, and this is in the great curvature in the region of the antrum of the pylorus, because when the stomach empties itself the antrum forms the lowest point, and in it the peristalsis is greatest. He agrees with Mayo in saying that the vicious circle is more apt to occur with an open pylorus; the inference is obvious, therefore, that when the pylorus is open one must be very careful as to the method of operation selected. When the pylorus is narrowed or blocked, any method will do. He describes as the normal method the antecolic gastrojejunostomy of Wölfler, improved in the sense that the intestine is to be attached to the stomach over a greater extent, so as to prevent kinking at the junction, and, in the second place, by making a much larger opening—6 to 8 cms. in diameter. The loop of jejunum selected for anastomosis is some 40 cms. below the duodenal junction, while in the stomach he selects the lowest part of the pyloric antrum, and at this point he detaches the gastrocolic ligament from the greater curvature. Where the wall of the intestine is thick enough, he employs three tiers of sutures.

In the retrocolic operation associated with the name of von Hacker, the same portion of stomach is selected for anastomosis, and to it the jejunum is applied in a vertical direction. He does

not describe the operation which we now associate with the name of Mayo. Braun's addition of an enteroanastomosis to the anterior operation and Roux' Y-method are also described. He draws attention to the fact that Roux, who discovered the Y-method, has come back to the simple operation when operating for ulcer of the stomach, because in the simple operation the contents of the intestine regurgitate into the stomach and neutralize its acid contents, thus favoring the healing of the ulcer, whereas with the Y-method such regurgitation is impossible. Gastroduodenostomy is especially indicated in preference to gastrojejunostomy when the pylorus is permeable; and now that it is so easy to mobilize the duodenum, the operation is no longer a difficult one, and the results are extremely good, as, of course, there is no question of a vicious circle. He does not refer to Mayo's objection to gastroduodenostomy, namely, that the gastric contents continue to pass through that portion of the stomach which is most exposed to trauma and is most frequently the seat of ulcer. Kocher does not think there is any risk of narrowing of the new opening in gastroenterostomy except in cases where the Murphy button or one of its substitutes has been employed. He does not believe in resecting the stomach for simple ulcer unless in the belief that it is undergoing transformation into cancer, because the operation is a difficult one, and is attended with a much higher mortality than gastroenterostomy.

The chapter on the treatment of carcinoma of the stomach has been largely rewritten. Kocher has resected the stomach for cancer in 120 cases, and in the last recorded series the mortality was reduced to 17 per cent. In uncomplicated cases he thinks the operation should be described as "not a dangerous one" when it has been performed by his own method. He does not at all approve of the somewhat general adoption of Billroth's second method as the operation of choice in cancer of the stomach. The closure of the duodenum is very properly described as the dangerous part of the operation. The objection made against Kocher's method, that one endeavors to leave more duodenum than in other methods, so as to diminish the difficulty of bringing it into contact with the posterior wall of the stomach, he does not think is valid, because no more duodenum is required for the anastomosis than for its efficient closure. Since the duodenum can be so easily mobilized, he does not think there should be any objection to his method of gastroduodenostomy, and that it should be regarded as the normal, because it has all the advantages of Billroth's second method without its disadvantages. Two different kinds of clamps should be used in resecting the stomach. Ones for crushing are to be used when the viscus is to be cut across immediately beyond the clamp, and the crushed edge invaginated: closure clamps, on the other hand, are applied at a distance merely to control the contents of the viscus. The

details of the Kocher operation must be studied along with the excellent figures which illustrate the steps of the operation.

Billroth's second method is described, but on account of the risk of the vicious circle distending the duodenum and endangering the occluding suture of this viscus, an enteroanastomosis must be added. Inasmuch as this implies two occlusions and two anastomoses, the operation is a very prolonged one. Billroth's first method has been given up, because of the weak point at the junction of the two sets of sutures. One of the most unfavorable complications of cancer of the stomach is met with in cases where the cancer is adherent to the mesocolon and transverse colon; the great danger when the mesocolon is implicated is that gangrene of the bowel may take place; in operating, therefore, in such cases, it is of great importance to determine the viability of the colon, and the most reliable guide to this is the pulsation of the vessels in the mesocolon. If these do not distinctly pulsate, the colon should be resected straight away. Under these conditions it is better to close both ends of the colon after resecting it, and re-establish the continuity of the canal by making an anastomosis between the lower end of the ileum and the descending or sigmoid colon; in performing this, the ileum should be cut across, the lower end closed, and the proximal inserted end-to-side into the colon.

The criticism is made of the forty-six cases recorded of total gastrectomy for cancer, that the majority of them, including Schlatter's well-known case, were not really complete excisions. This makes all the difference, because the leaving of a small portion of the stomach at the cardiac end makes it possible to have reliable stitching whereas, when the sutures are passed through the esophagus without any peritoneal investment, they are apt to tear through. He describes two operations for total gastrectomy; in one method the duodenum is joined to the esophagus; in the other, a loop of jejunum.

Kocher is a firm believer in the benefits of gastrostomy for cancer of the gullet, because patients who are nigh unto death through starvation may be restored for several months to a bearable life, and even to capacity for work. The operation should not be too long delayed, because in advanced cases there is much greater risk; the patient being run down with septic poisoning, he is much more liable to pneumonia, heart failure, and periesophageal cellulitis with perforation into the pleura. The operation described is a modification of Witzel's. It is Kocher's experience that gastrostomy is not of much advantage in cancer of the cardiac end of the stomach, and, as a rule, a jejunostomy is to be preferred. He does not practice gastroplication or gastropexy, as the results from gastroenterostomy are very much better.

The surgery of the intestines is introduced with remarks on the essential differences between the large and small bowel. Owing to the decomposition changes in the large intestine, the least contact

of the contents with the surroundings almost inevitably causes infection, and the sutures are more liable to become infected, so that even in the hands of experienced surgeons the sutures do not always hold. As compared with the small intestine, in which the fluid contents can easily pass through a narrow segment whose capacity for peristalsis may have momentarily suffered, the contents of the large intestine easily stagnate when the lumen has been narrowed and the peristalsis disturbed by resection, and there is, therefore, greater strain on the sutures and on the raw surfaces, and, apart from perforation and peritonitis, necrosis of the mucous membrane may take place and lead to metastatic infections, especially in the form of pneumonia in elderly people. In order, therefore, to resect the colon with perfect safety, one must arrange for the escape of the feces above the site of suture, either by means of an artificial anus or by anastomosis between the bowel above and the bowel below, *e.g.* ileosigmoidostomy.

In patients reduced by a neglected obstruction of the bowels, one should be satisfied in the first instance with emptying the contents of the bowel by means of an artificial anus. In patients who are not so reduced, and who can stand a laparotomy, it is often wise to make an anastomosis between the ileum and the large intestine below the block, and leave the resection of the colon for a second operation. The anastomosis should be made by the method in which the ileum is cut across, the lower end closed, and the proximal end inserted into the colon end-to-side. In patients in good condition even, it is probably better in the majority to adopt the two-stage method. Although Bloch appears to have introduced the two-stage method, Mikulicz is given the chief credit in furthering its acceptance, and there can be no doubt that since it has been adopted the mortality of colon resections has diminished. In this, as in other resections of the intestine, the operation has been greatly simplified by Doyen's crushing forceps, and the risk of infection has been diminished by the use of rubber gloves. In contrast to the two or three-stage operation, which is performed in other parts of the colon, a one-stage method is generally practiced in resection of the ileocecal segment. It should be noted that the ileum must not be divided at its lowest part, because there the mesentery is too short; it should be divided at a higher level, so as to allow of the divided end being brought without tension into contact with the ascending or with the transverse colon. In all resections of the colon the raw surfaces in the posterior abdominal wall are to be covered in by bringing the edges of the peritoneum together, and, in addition to the long glass drain, which is inserted down to the line of suture, two short drains are placed in the wound in the parietes, as suppuration not infrequently takes place in the abdominal wall.

There is nothing characteristic in the surgery of the vermiform appendix except the usual thoroughness which we associate with every department of Kocher's work. He agrees with Roux and

others that the radical operation ought to be performed in every patient who has had one attack of appendicitis, and he lays great stress on the necessity, where one has the choice, of not performing the operation until the inflammatory phenomena have entirely disappeared, that is to say, on an average three months after an acute attack. In performing the interval operation, MacBurney's method is that selected, as by it the abdominal wall is most perfectly reconstituted, and the patient can leave his bed in eight days. With regard to the question of operation in the course of an acute appendicitis, Kocher associates himself with those who believe in the routine early operation. He lays down the law that it is the duty of the doctor in attendance to consider the question of early operation in every case, that this should take place in the first twenty-four hours, if possible in the first six to twelve hours, and that it is better in a clinic than in a private house. At the end of twenty-four hours it may be said that on the average the most favorable time for operation has passed. In operating for acute appendicitis, a larger incision is required than in interval cases, so as to afford better access, not only to the region of the appendix, but for the removal of the inflammatory exudate. It is better not to crush the root of the appendix, as is done in interval cases, because the appendix is thickened and friable; it is simply tied off with catgut, or a portion of cecum may be removed at the same time so as to be able to close the bowel more accurately by means of sutures.

In cases where there is diffuse peritonitis, such as those from infection with the colon bacillus or streptococci in adults and by pneumococci in children, he makes an incision above Poupart's ligament on either side, and, having rapidly removed the appendix, there follows a thorough evacuation of the exudate by irrigation with salt solution, a long curved glass tube being used, shaped like the glans penis at its extremity, and washing out in succession the pouch of Douglas, the region above and below the liver, the stomach, spleen, etc., until the fluid returns quite clear. Long, wide drainage tubes are inserted from both incisions downwards into the pouch of Douglas, and upwards along the colon, and warm, moist, frequently changed compresses are applied. If there is paralytic distension of the bowel with accumulation of intestinal contents, the opening in the cecum where the appendix has been removed may be used for draining the bowel, or one or more fecal fistulæ are made in the small intestine as advocated especially by Lennander. He believes also in the Fowler position, the liberal administration of strychnine hypodermically, and in the continuous introduction of salt solution into the rectum as recommended by Murphy. He further insists on the necessity of washing out the stomach and the early administration of laxatives. When a patient first comes under observation with an already diagnosable abscess, he does not think there is any hurry in opening the abscess, but is inclined rather to have the patient carefully

watched, with rest and restricted diet, but without opium; at the same time he confesses that, if the abscess is readily accessible, convalescence is hastened by opening it. If the abscess is to be subjected to operation, it must be clearly understood that the removal of the appendix is of very secondary importance. It is often a much better plan to proceed to the removal of the appendix twenty-four hours or a few days after opening the abscess, employing an incision quite distinct from, and as far as possible away from the incision for opening the abscess. In this way patients may be discharged from hospital in a couple of weeks, in spite of their having had a large appendicular abscess.

Great interest attaches to the chapter dealing with the surgery of the rectum, as we have always regarded Kocher as the most reliable guide in this field. The sphere of surgery in rectal cancer has been considerably extended within recent years, and although a considerable mortality is still recorded, the prospects of radical cure are approaching those obtained in other parts of the body. The mortality would appear to range from 3 to 4 per cent. in the easy cases, up to 50 per cent. in the most difficult cases, where nothing but a combined—abdominoperineal—operation affords any chance of cure. He quotes Mayo's statistics for the combined method, which record a mortality of 26.3 per cent., and agrees with Gross that the mortality from the combined operation is higher in men than in women. So far as the permanent results are concerned, an analysis of eighty-three cases operated on by Kocher showed that there were 25 per cent. of radical cures. In preparing patients for operations on the rectum, stress is again laid, as in former editions, on two whole days being devoted to clearing out the bowels, while for two days before the operation they are kept absolutely quiet by bismuth and opium, and during this time the patient only receives fluid nourishment from which milk is rigorously excluded.

Although Kraske has the credit of having first directed attention to the posterior route, Kocher's own method, by the posterior median incision with resection of the coccyx, is regarded as the best. It affords good access, it allows one to go high enough and remove everything, and it has the advantage of sparing the nerves and muscles of the anal canal. The operation is specially intended for carcinomata which do not implicate the anal canal, and as the majority of cancers affect the ampulla only, it is the operation which is most often required. When on account of perirectal infiltration and extensive ulceration in the bowel itself there is danger of the rectum tearing in the course of the operation, it is better at once to split the rectum posteriorly in the middle line throughout the whole extent of the diseased portion. The vaginal incision is to be selected when the rectal carcinoma is fused with the vagina or uterus, and it will usually be advisable to remove the uterus at the same time. The combined or abdominoperineal method, which has been chiefly developed by Quénu, is indicated

in very highly situated tumors, in which the extent of the disease and its mobility cannot be learned for certain by examination from below; further advantages are that suspicious perirectal tissues and glands are more efficiently removed than by any other method, and that in commencing the operation from the abdominal aspect one may, at an early stage in the operation, tie the chief arteries concerned, especially the superior hemorrhoidal. In spite of the very high mortality, of which Mayo's 26 per cent. would appear to be the lowest, and in spite of its occasionally leaving a permanent paralysis of the bladder, the combined operation gives results which are not obtained by any other method. The details of the operation described by Kocher are very similar to those given by Quénu and by Mayo.

In operating for hemorrhoids, he prefers the ligature method, and recommends the use of bismuth suppositories, these being inserted thrice daily; he has given up Whitehead's operation in spite of its "elegance," because of the occasional production of stricture. In the treatment of aggravated cases of prolapse of the rectum he has found colopexy a satisfactory operation, especially when it is combined with a plastic operation on the perineum; incisions being made in front of and behind the anus through which the muscles are shortened. In performing colopexy, he gives the useful hint that when the pelvic colon is pulled upwards, an assistant should observe the effects of this traction upon the rectum from below, and it is only in cases in which the rectum is drawn up and becomes tense that one should proceed to fixation of the colon.

DISEASES OF CHILDREN.

Scurvy in Infants.—M. A. Broca (*Gaz. des Hôp.*, April 23, 1907) states that infantile scurvy is rarer in France than in America or England because the children are generally nursed or fed on sterilized milk rather than on prepared foods. Sterilized milk will sometime result in scurvy, however. It appears rather suddenly in a child that is fairly well nourished, and the first symptom that is usually noticed is swelling of one or both of the legs; the limb becomes tender to pressure and painful on motion, and that causes temporary pseudoparalysis. Osteosarcoma, tuberculosis, and osteomyelitis must be differentiated. In infants that have no teeth there will not be any symptoms referred to the gums, but when the teeth have appeared there will be a swollen condition of the gums about the roots of the teeth. Later come multiple lesions of the bones. The treatment consists of substituting for dead, preserved foods, fruits in the form of orange and lemon juice, and vegetables. Purée of potatoes is well borne. The relief from the change of diet is immediate.

Enteritis and Appendicitis in Children.—J. Comby (*Arch. de Méd. des Enf.*, April, 1907) says that the appendix in children may have been swollen, indurated, obliterated, or profoundly dis-

eased, without any characteristic symptoms having been noted other than those of an ordinary severe enteritis. A considerable number of these appendicitis cases are cured spontaneously, without the diagnosis having been made. The appendix is not tender. Anemia, loss of flesh, and dyspepsia do not suggest appendicitis, but rather enteritis. Appendicitis is essentially chronic in children. Enterocolitis of the membranous type especially predisposes to appendicitis for two reasons: the appendix is a part of the colon with the same structure, and the lymphoid tissues of the large intestine are especially involved. Enterocolitis and appendicitis are generally preceded by rhinopharyngitis and adenitis in children, which seems to mark a first stage of the intestinal infection. Appendicitis is in reality a sequel of gastrointestinal infection, a special localization of the infective process of the digestive tube. In order to prevent these diseases we must regulate the child's diet, treat enteritis as soon as it exists, and not neglect rhinopharyngitis when it appears in early life, since it may precede intestinal troubles ending in appendicitis.

Living Lactic Acid Bacilli for Intestinal Fermentation in Infancy.—Following Tissier's suggestion as to the administration of lactic acid bacilli in cases of fermental diarrhea, C. H. Dunn (*Arch. of Ped.*, April, 1907) selected buttermilk as a vehicle as this would combine medicine and food. The milk was first pasteurized, then inoculated with a pure culture of lactic acid bacilli, and ripened until the development of the organism had brought about the proper acidity and precipitation of the casein. The results proved exceedingly striking. The unpasteurized buttermilk was tried on 35 selected cases. Of these there was evidence of a favorable result, as shown by a change in the character of the dejecta and by gain in weight, in 23. In three there was immediate cessation of diarrhea and favorable change in the character of the dejecta, without gain in weight. In nine cases the lactic acid bacilli produced no effect. Only two of the cases of failure were frankly of the fermental type. In the majority of the cases the buttermilk was begun only after all ordinary and routine measures had failed.

To justify the conclusion that these favorable results were due to the action of the living lactic acid bacilli, and not merely to the chemical qualities of buttermilk as a food, the buttermilk was first given in a pasteurized form in fourteen resistant cases of the fermental type, and after a sufficient trial had demonstrated a failure to improve, the pasteurization was omitted. Immediate improvement followed this in every case. Buttermilk as a food is not always adapted to the caloric needs of individual infants, for whom a certain amount of fat may be necessary, the existence of fermental diarrhea not implying the existence of fat intolerance. In such cases any desired percentage mixture may be ripened with lactic acid bacilli. The value of this method of treatment lies chiefly in its being an additional resource in difficult cases.

Chemistry of Milk.—L. L. Van Slyke (*N. Y. Med. Jour.*, May 25, 1907) says that in milking, the first portion drawn is fairly good skim milk. Each successive portion increases in fat, the last portion, or strippings, being extremely rich. This fact suggests that, in obtaining samples of breast-milk for analysis, the breast should be allowed to become fairly full, and should then be exhausted as completely as possible to furnish a proper sample. Again, milk from different quarters of a cow's udder varies quite materially in composition. It would seem desirable that, in taking samples of breast milk for analysis that from each breast should be obtained and examined separately. The writer also calls attention to the fact that the casein increases with the advance of lactation more rapidly in proportion than does fat. Therefore, it may easily happen that, owing to this change, cow's milk which at one time agrees with a child, may later fail to do so, even though healthful in every other respect. The average of about 5,500 American analyses, mostly made at the Agricultural Experiment Stations, and, under known conditions of production, gives approximately the following figures: Water, 87.10; solids, 12.90; fat, 3.90; casein, 2.50; albumin, etc., 0.70; sugar, 5.10; ash, 0.70. The statement is current that casein and albumin are present in cow's milk in very constant relative proportions, the amount of casein being five times that of albumin. Taking the amount of albumin as one, casein varies all the way from 2.6 to 5.6, the average being only about 3.6 parts of casein to one of albumin.

The Composition of Human Milk and Its Chemical Analysis.—H. Lescœur (*Le Nord Med.*, July, 1907) says that the apparent lack of total solids in some specimens of human milk that are analyzed to ascertain their powers of nutrition, is due to the absence of a sufficient amount of cream. Now, it is noticeable that specimens of cow's milk taken at different times during milking will vary in the amount of cream, especially if taken in the beginning of milking, the most cream appearing in the last portion of the milk. The samples of human milk are always small in amount, and are not drawn so as to give a sample from the whole of the milking. Thus the amount of cream is not a true index of the richness of the milk. The examination of the whey of the milk bears out this conclusion. Woman's milk coagulates without separating like cow's milk, and when filtered properly it separates into a precipitate and an opaline liquid. The density of this liquid is of great importance. If normal the density will be 1.036; if below par the density will fall below that figure. In different nurses the quantity varies, while the quality does not vary materially. The density of milk is exactly proportional to the amount of solid matter contained. The chemical examination of human milk, then, is inexact and deceiving. Test of the whey, and determination of its density, is of value. The density, which varies between 1.026 and 1.033, serves as a practical basis for the classification of milk and its nutritive value. Variations depend

on age of the milk, return of the menses, pregnancy, and sickness, and these affect especially the quantity and not the quality of the milk. In case of defective nutrition, substances may pass into the milk which will affect the health of the child, but these cannot be discovered by chemical analysis.

Amount of the Ration in Nursing and Artificial Feeding.—F. Siegert calls our attention to the fact (*Ann. de Méd. et Chir. Inf.*, May 1, 1907) that the ration of the infant was long proportioned to considerations of little real importance. The quantity of milk taken at each nursing varies with the individual needs of the child, its age, weight, vigor, hunger, intervals between feedings, and ability to empty the breast. The fact of most importance is the length, not of the stomach but of intestinal digestion, which is not a negligible quantity, and which has never been considered in arranging the length of time between nursings. The intestinal digestion lasts from three and a half hours to four hours, and the intestine should not functionate without rest. Hence such should be the intervals between the feedings, and any infant will easily become accustomed to such an interval. The author has recorded the development of two infants brought up on such intervals, only four feedings being given in twenty-four hours. The amount taken at each feeding should be greater under such a system than when food is taken more frequently.

Overfeeding of Infants.—According to Joseph Breunemann (*Jour. Amer. Med. Assn.*, April 20, 1907), overfeeding is so prevalent in this country that it is the rule. It is second to no other factor in the pathogenesis of infant feeding, and presents an easily recognizable, definite symptom-complex. The percentage method is inadequate to prevent overfeeding, the well-known feeding "schedules for an average healthy infant" of a given age fostering it by recommending excessive amounts; and, moreover, mere percentage leaves undetermined the amount of food the baby gets. To feed rationally, and especially to prevent overfeeding, it is necessary to know how much food the baby is getting in proportion to its body weight, best expressed in terms of energy quotient. The disturbing element in overfeeding with cow's milk is the fat, which in excessive amounts regularly produces constipation; proteids never do so. It is never necessary to give more fat than proteids of cow's milk. The interval between feedings should be 4 hours.

Care of the New-born Infant.—E. W. Saunders (*St. Louis Cour. Med.*, April, 1907) protests against the application of bands that are so tight as to interfere with respiration and normal expansion of the abdomen and peristalsis, and in the application of diapers drawn so tight against the perineum as to cause excoriation, or even deformities of the pelvis. No doubt infections after circumcision are due to the use of tight diapers. After circumcision, or in fact in case of any irritation about the vulva or the genitals, the diaper should not be pinned up at all. There

is no reason why it should be, if children are lying horizontally. Many cases of eczema and painful excoriation can be cured only after this pernicious custom has been abandoned. There is no doubt also that it is a frequent cause of onanism in babies of both sexes. It is well to remember that in infancy the middle-ear and the pelvis of the kidney are the most defenseless portions of the body against infection, and in every case of fever, with or without pain, not explicable on other grounds, the ear should be examined, and the urine examined microscopically.

Milk as a Carrier of Infection.—It is known, says Charles Harrington (*N. Y. Med. Jour.*, April 13, 1907) that the non-bovine diseases capable of being spread by milk include typhoid fever, dysentery, scarlet fever, diphtheria, and the group of diarrheal diseases called cholera infantum. After discussing the rôle of chronic carriers of typhoid and of polluted water at the farm, he says that the number of outbreaks of milk-borne diphtheria recorded is far smaller than those of typhoid, since it is not a disease carried by water, and not one in which the germs are conveyed by the hands from the excreta. In connection with the transmission of scarlet fever, he calls attention to an epidemic in which the source of infection was traced to a milk tester at the distributing center. This shows the necessity of watching the handlers at the point of delivery as well as those at the place of production. Outbreaks of septic sore throat have been traced in Great Britain to milk from cows with garget. If the cause was garget, it is strange that such epidemics are not more common, in view of the prevalence of this disease among cattle.

Pasteurization.—R. G. Freeman (*N. Y. Med. Jour.*, March 23, 1907) says that 70° C. (158° F.) can be relied on to kill tubercle bacilli only when continued for twenty minutes. As a matter of fact, in commercial pasteurization milk is heated to 70° C. (158° F.) for only fifteen seconds, so that such pasteurization does not offer any protection against the tubercle bacillus. And, again, while efficiently pasteurized milk is comparatively sterile, commercially pasteurized milk, as sold in New York and elsewhere, usually contains a very large contamination of bacteria. Moreover, the purposes of these two types of pasteurization are quite distinct. Efficient pasteurization is used to protect infants and invalids from the bacteria of milk. Commercial pasteurization is used only to prevent dirty milk from souring before it can be marketed. Such milk commercially delivered shows far more bacteria than the better grades of raw milk, for it is a well-established fact that pasteurized milk when contaminated anew, even if kept moderately cool, allows a very rapid increase in bacterial content.

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ORIGINAL COMMUNICATIONS.

BACK TO AN OLD IDEA, FOR IT INTRODUCES A NEW
PRINCIPLE IN SURGERY.¹

BY

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ABOUT the middle of the last century a number of surgeons were calling attention to the desirability of rapid operating, and promulgating the idea that patients recovered more quickly when the attack of surgery had been of short duration.

The idea was based upon ordinary observation, rather than upon science, at that time.

Into the field came Pasteur, Semmelweiss, Lister. The attention of the whole surgical world was diverted toward questions of antiseptics and of asepsis. The patient himself was forgotten in our skilled maneuvers against the bacterium. Tait stood out alone upon the plain in the midst of the whirlwind, and his statistics were too good to be generally accepted. He stood upon his *ipse dixit* rather than upon a basis of scientific explanation, which to-day can be given.

The dominant idea became that of preventing nature from growing her favorite colonies of bacteria at our expense, and we were to accomplish the task by our artifices. That is the

¹President's address at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, Detroit, Mich., September 17-19, 1907.

dominant idea right now. It is crude and incomplete, and is shortly to be rounded out by the idea of conserving the natural immunity of the patient, and of holding his opsonic index up, even as the hands of Moses were held up. The patient himself is to be our best ally, and in our pride of achievement with artifices against the bacterium, we are not much longer to disregard such an ally as nature gives us in the patient.

That takes us back to the old idea of the middle of the last century, but it introduces a new principle which can be stated in terms of classified knowledge—something which could not have been done at the time when the old idea was in practical application.

The surgical patient is a factory. The business of the factory is the manufacture of opsonins for disabling bacteria, and of phagocytes for destroying them. Our new idea is to stop disturbing this factory with surgical methods which interfere with its output of opsonins and phagocytes.

How are we to do this? By avoiding long debauch with intoxicating anesthetics. By not choosing, for patients who are to be saved, a type of incision that is popular for killing bears. By not allowing the patient to be bitten to death by a pack of snapping artery forceps. By disturbing as little as possible viscera which ring up the central stations of the sympathetic ganglia whenever they are touched. By not wasting the patient's vital energy through unnecessary detail in conscientiously carrying out perfected technique. The cap of the climax of the dominant idea was the introduction of the rubber glove. This last refinement of our art intensified the worst features of our methods. This last foot of ice upon the Antarctic pole is to upset our earth and change its axis of rotation.

I often say to the physician of a patient: "Now do you wish me to do an ideal operation, or would you rather have me save your patient?" It seems to me that the most important single feature in helping the business of the factory is rapid operating. Not hurried work, but expeditious completion of necessary steps, and to this point I will devote the chief part of my address.

In Philadelphia two surgeons of about the same capabilities have different statistics. A house surgeon serving under both was asked the reason for the difference in statistics and his reply was "about ten minutes."

I asked one of our professional anesthetists who works with

from two to ten surgeons a day, what, in his opinion, was the most common fault among surgeons. His answer was, "Puttering and unnecessary attention to detail in technique." On that same afternoon, working with another anesthetist, I quoted the first one, and asked if he agreed. He said, "Precisely; there are surgeons for whom I will not work, and I am engaged when they call for me. I have seen patients' chances for recovery lessened and have seen patients killed outright, in cases in which they could easily enough have recovered."

I wrote to two other professional anesthetists on the point. One of them replied: "I have observed beyond all question that patients do best when the surgeons do quick and, particularly, gentle work. These patients rarely have shock, and they recover easily from the effects of the anesthetic." The other answer was: "I certainly do believe that not only are the patient's chances for recovery lessened in certain cases, but whatever chances they had were lost." The public knows nothing of this sort of thing, and very many physicians are unfamiliar with its meaning. How is it that surgeons have come to this sort of criticism on the part of men who are generally recognized as competent to criticise? It is through conscientious perfection of art which leaves the patient out of the structure. The play proceeds while Hamlet is too ill to be present. It was the introduction of anesthesia that first brought about a change to methods which were better for the patient in one way and worse in another way. The law of compensation worked out there as it does in most other fields of human activity. Men who had worked rapidly because of compassion alone adopted slower methods after the introduction of anesthesia, and sometimes became so deliberate in their movements that the patient was injured without the surgeon's cognizance of the situation. Then came our study of the bacterium, and that still further opened up vistas of observation which left the patient out of the horizon.

It was during the middle of the last century that the fine idea of rapid operating started to grow into an imposing feature of the landscape, but it was blown down before reaching prime by anesthesia and by antisepsis. Now it will sprout from the stump again. Among the very earliest writers, the ancient writers, there is no reference to rapid operating. Their works were mostly didactic and for novices, and not for trained men. To have counseled rapidity of operating would have entailed too much respon-

sibility, and tyros would have been tempted to place speed before other requisites perhaps. The relationship between the duration of an operation and the degree of shock is essentially a modern discovery. I have been surprised in looking over the literature of the subject to observe how modern a discovery it is, and how essentially English and American it is in its development.

The old Romans made no reference to the matter of rapidity of operating. They divided surgeons into the *Vulnerarius* who treated wounds with dressings, and the *Carnifex* who operated for stone and hernia. The *Carnifex* was barely tolerated by the Romans. The Greeks at that time could not do much operative surgery because they did not understand the ligation of arteries. Celsus is the first writer to the point, and he is opposed to rapid work, saying that the surgeon must not have compassion which will lead him to hurry. Celsus bears merely upon the point of "hurry" to condemn it, and most of us to-day will agree with that particular feature. There is a distinct difference to be made between hurry and safe rapidity.

Ambrose Paré, in the sixteenth century, speaks of rapidity. He defines surgery as "a quick motion of an intrepid hand, joined with experience."

The next great writer is Heister, in the seventeenth century. He quotes Celsus with approval and states that the operator "should use expedition, but not hurry."

Coming to the English school, Sir Astley Cooper does not mention rapidity, and states that self-possession and knowledge of anatomy are of first importance. Sir Robert Liston praises skill, caution, dexterity, adroitness, and tempered boldness, but does not refer to time spent in operating.

A number of contemporary teachers such as Bell, Lizars, and others do not go into the matter of qualifications and requisites at all.

Velpeau's great work contains no reference to time saving, excepting when syncope (shock?) sets in, and he says that it may then be necessary to complete an operation quickly, or to finish it at a second stage.

Just after the introduction of anesthesia Skey awoke to the fact that shock might be inseparable from any operation, and that the duration of operations on anesthetized patients was introducing an element of danger, "for the duration may exceed the endurance of the patient."

Henry H. Smith goes out of his way to condemn rapidity *per se*, and believes that the day of rapid surgery is happily past. He does say, however: "Safely at all events, quickly if you can."

Morand, a Paris surgeon, wrote a short article in 1772 on the subject of the old adage, "Tuto, cito, jucundo," and said that it applied to surgery quite as well as to medicine. "One should operate safely, quickly, and pleasantly." Bardeleben, in 1874, expresses the idea of Morand as though it were his own. The surgeons of the past century did not, as a rule, deal with the conduct of operations in general in such a way as to bring out the matter of rapidity of operating for the sake of preserving the patient's strength, but Bardeleben, in the seventh edition of his work (1874) says that "safety is the first consideration, but rapidity is a goal to be aimed at, and is sometimes indispensable. Cases occur in which protracted pain can lead to death, quite as well as does loss of blood. Rapidity need not be the same in all stages of operating." Elsewhere he again states that prolonged duration of operation may lead to exhaustion of the patient. He does not mention shock, but speaks of syncope, which would probably be held to mean about the same thing to day.

Treves, in his "Operative Surgery" (1892), gives pictures of the rapid operator of the past, conceiving him in the light of a player to the gallery, and giving him no credit at all for trying to preserve the patient's energy. He makes light of dexterity in surgery, as compared with the dexterity of the artisan, and says that "the days of brilliancy are past."

In this connection I would say that some of us who are interested in brilliantly preserving the natural immunity of the patient—holding it on a par with the principle of chemically and mechanically attacking bacteria—are just now being charged with playing to the gallery. I hear the work of certain colleagues referred to in this way, and presume that my own ideas naturally meet the same sort of reception. It is my feeling that other operators who try to work rapidly do so with no intention of gaining personal *éclat*, for the matter does not really work out in that way at the present day. Certainly not to the point of substantial recognition. There is something else back of the motive which led physicians and surgeons in the past to make enthusiastic audiences for particularly rapid operators. It must have been that the audiences recognized some fundamental benefit for the pa-

tient; because underlying all of our professional feeling is the basic desire to see the sufferer helped—*Res est sacra miser*.

I believe that the attitude of a conservative profession toward new ideas is legitimate and commendable. It is our only protection against the introduction of a multitude of fanciful and harmful theories that are foisted upon us daily by earnest advocates of unwise plans and of imperfectly constructed methods. We are eager enough to accept new ideas when they are properly presented, and in a way to appeal to the reason; but we are all so busy in carrying out established ways for doing good that it is difficult to take time for a new stand and for comprehending a new principle. The bias shown by Treves and by Henry H. Smith toward rapid operators gives me the impression that they probably had in mind certain colleagues who won more or less applause for their ways of working.

Up to about forty years ago operative shock had no literature, but during the latter part of the last century a great many writers took up the subject. For the most part they describe shock as due to a multitude of personal and external factors, rather than to the direct effects of operative work. The latter effects were spoken of as "exhaustion." Exhaustion, not shock, was relative to the duration of an operation, according to most of the writers of the middle of the last century.

I am fully agreed with the ancient and modern writers who argue against hurry in operating, but we must cultivate as far as possible a rapidity of action which will make every move count, and which will allow the average abdominal operation, for instance, to be completed in about fifteen minutes. Get in and get out! Personally I have not been able to do stomach and bowel resections or complete breast amputations in much less than thirty minutes, but appendicitis operations, in cases with many complications, are frequently completed in five minutes. We must drop many of the details of our beautifully constructed technique, which has for its object the removal or the destruction of bacteria, and we must come to know the face value at least of the natural immunity of the patient. We must conserve that immunity and not sacrifice it upon the altar of our art. Dabarn poured milk, representing pus, into the abdominal cavity of a cadaver, and then set to work to determine how to get it all out. After a degree of incising, sponging, and flushing, sufficient to kill a bear, there was still plenty of milk left. How are we to

read that object lesson? By perfecting methods for getting that milk out? Oh, no! That would be in accordance with the dominant idea in surgery at the present moment, but it would be all wrong. The right way is to leave the patient in condition to take care of the milk himself. My own method would be to quickly open the peritoneal cavity with a pair of scissors, turn out the appendix and whatever pus happened to be close at hand, and put in a little wick drain. If pus flowed over normal peritoneum, exposed by the separation of adhesions, I would leave it, and expect that as an albuminous fluid it would furnish a certain amount of nutrition for the patient, even though its mercaptans and sulphur ethers smelled like very dangerous material. Fifteen years ago I would have stood aghast at the mention of any such treatment. It would be subversive of all that I learned of wound treatment in expensive trips to Europe. Who taught us this new lesson? The physician who did not believe in operating for appendicitis. His attitude was immoral, and when asked to defend himself he always ran away and hid behind bad surgeons, but he was of service to the profession because he taught us a lesson at the patient's expense. How did some patients with pus in the peritoneal cavity recover? Precisely as they do regularly after a quick and unideal operation. The only difference is this. In one case the patient fights it out all alone and unaided, and in the other case we step in and turn the tide of battle between phagocytes and bacteria. That is the principle—turning the tide of battle and letting the patient annihilate a running enemy with a rear fire of opsonins and phagocytes. By the popular method of sponging, and flushing, and filling the patient with gauze—committing taxidermy upon him—we fire directly into the ranks of our ally and disable him at the start. The only pus that I would leave in sight in quantity is the pus of protective staphylococcus albus infection, but a search for all of the pus in the peritoneal cavity ends like the search of the man who suspected the presence of a leak in the gasoline barrel in the cellar and who went down with a candle to look for it.

I believe that under the new principle of conserving the natural immunity of the patient we can get our death rate in appendicitis down to a fraction of one per cent.; taking all cases as they come, refusing help to none, and operating upon all who are still breathing when we get to the house. Hotchkiss, in the *Medical News* for July 2, 1904, states that at one of his hospitals, where many

emergency cases of appendicitis are received, the operative death rate for a series of years, under accepted methods of to-day, was 30 per cent. Hotchkiss then changed to methods which conserve the natural immunity of the patient, but which are not as yet acceptable to the profession, and there was no death rate at all in his next seventy-two consecutive operations for appendicitis, although the cases were of the same sort as those which had previously given a death rate of 30 per cent. Just stop and think of that for a minute! After dropping it out of mind, think of it again. Every once in a little while let it come back into mind. The secretary of the Standard Oil Company told me that one of the most important things in this world was to know a good thing when we saw it. Is it necessary for one to quote such authority to doctors? Apparently! I know of other statistics quite like those of Hotchkiss, properly recorded, and available for all who wish them. The one example will suffice. Once in awhile we will have an appendicitis patient with mesenteric thrombosis, or with pylephlebitis, or with such violent peritonitis that we must lose him, but the proportion of such cases is trifling. One gets to feel that it is well nigh impossible to lose any sort of an appendicitis case, provided that accepted methods of treatment are dropped.

For the last thirty or forty years we have tried so conscientiously and so scientifically to help the patient by following up his bacteria that we ran past the patient himself altogether. With our eyes upon the heavens, we have fallen over a fact upon the ground. A fact that was known to our teachers of earlier days. Now we must go back to the old idea of rapid operating, with its collateral features, because, by synecdoche, it stands for conserving the natural immunity of the patient. The first stage of surgery was heroic, the second was anatomic, the third was pathologic, and we are now about to enter upon the fourth or physiologic stage of surgery. Immunity is to be the watchword of the day, in surgery as well as in medicine. During the past thirty or forty years we forged far ahead of the internists, for our science was better than theirs. Now they are quietly slipping up to us, for their science is getting to be more comprehensive than ours. What, ho, watchman!

616 MADISON AVENUE.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Transactions of the Twentieth Annual Meeting, Held at the Hotel Cadillac, Detroit, Michigan, September 17, 18, and 19, 1907.

The President, DR. ROBERT T. MORRIS of New York, in the Chair.

AN address of welcome on behalf of the local medical profession was delivered by DR. A. N. COLLINS, President of the Wayne County Medical Society, which was responded to by Vice-President Charles L. Bonifield of Cincinnati, Ohio.

After the transaction of routine business, the reading of papers was proceeded with.*

OBSERVATIONS AND REFLECTIONS ON GALLSTONE DISEASES.¹

BY

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THE study of the clinical significance of gall-bladder pathology to-day stands in the medical foreground. Recent developments have shown that the gall-bladder rates second only to the appendix among the abdominal organs in their disposition to take on disease. Like the appendix, the gall-bladder is found to be a catchpool of disease germs, which display their activity under signs that longtime went unrecognized or were incorrectly construed. Much of our knowledge and the deductions made therefrom is of too recent achievement to hold as yet a settled place. Further study of detail is required. It shall be the object of this paper to chronicle some observations and reflections bearing on the movement of gallstones and gall colic.

The acute interest felt in this topic at this time obviates detailed introduction or extensive allusion to its well-known literature. Gallstone colic formerly was invariably associated with the move-

*Papers will be published in the Journal in the order in which they come before the Society, the discussion following the paper.

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

ment of gallstones. The concretions were regarded as the one essential element, the accompanying fever a mere reflex. Latter day views preponderate to ascribe to an infection of the gall-bladder the paramount significance; to the gallstones only coincident bearing. The inflamed gall-bladder swells the tissues of the bladder wall, the consequent secretions distend its interior, and both incite—by muscular activity and increase of fluids—the intracystic tension which propels the calculus into the cystic duct. Striking are the different views entertained with regard to whether the stone, as such, is or is not an inciting factor to gall-bladder contractions; and, too, opinions vary with regard to the size of stones possible to pass through the narrow biliary ducts.

The contention of Kehr and Riedel is illustrative of the variance of opinion prevailing about the relative frequency and significance of stone and inflammation in producing gall-bladder disquietude and disease. Kehr, adhering to general principles, attributes to infection practically the entire burden of these disturbances. Infection, according to Kehr, is present and causative, even in cases of lightest degree of colic. He scouts Riedel's idea that a foreign body inflammation (*Fremdkörperentzündung*) has clinical verification or significance. Riedel, in part agreeing with Kehr, for the rest assumes that the stone is the initiative etiological agent in many cases. He declares that the contention of some authors that the gall-bladder becomes infected through the duodenal papillæ, is wanting in conclusiveness. He argues that the hydrops of the gall-bladder is the starting point of an acute cholecystitis. The latter, so he maintains, develops slowly in the course of years. The stone uppermost in the gall-bladder, usually the largest and oldest stone, in so far as it is not an only stone, advances into the neck of the bladder, which it occludes. Gradually the pigment in the bile of the bladder becomes absorbed, the water is retained, and the hydrops with stone is an accomplished fact. The patient observes nothing of this, and nothing even when pressure ulcers form and the contents of the gall-bladder become turbid—not even when microbes and leukocytes appear in the serum. The accumulation of pus in the gall-bladder goes on unobserved until, finally, the attack of so-called gallstone colic sets in.

The immediate cause of the colic, Riedel says, commonly is unknown to us. Only at times it becomes associated with a trauma. The uplifting of a heavy burden, a strain, a jarring from riding over uneven roads, rough palpation of the diseased gall-

bladder, are insults which may call out the cholecystitis, as they often do evoke attacks of appendicitis. It is designated an acute lighting up of a chronic disease. The attack develops variously, differing with the contents of the gall-bladder; it is mild when the serum is sterile, and grave, even stormy, when the microbic contents are accordingly.

Kehr's view that an infection supervenes upon preexisting gallstones, generally speaking, is supported by clinical and pathological observations and reasoning. It would seem indisputable pertaining to cases attended with rise of temperature. Less so where pyretic temperatures are wanting. There are no doubt cases where the verified passage of stones is unattended with fever. The writer, about twenty years ago, systematically treated attacks of recurrent gallstone colic with podophyllin. This remedy was given in one-quarter grain doses, three times daily, with just enough morphia and ipecac to touch off the harsh edge of the intestinal colic produced by it. It was found that this remedy, in the majority of cases, brought on gall-colic of variable degree. It was not equally successful in eliminating stones, as might be expected from the nature of the accompanying conditions in such cases and the varying size of gallstones. But a number of the cases so treated were relieved of gallstones which appeared in the stools. One case in special stands out boldly in memory. A long history of so-called "stomach cramps," a persistent use of podophyllin, followed by violent, recurrent attacks of gall colic through three weeks, oftentimes calling for hypodermics of morphia and atropia; finally, one night, with stool, a grist of twenty-nine gallstones were released. In these cases there was observed no elevation of temperature, though at times it was found to be subnormal.

To the writer it seems unmistakable there are cases which are unattended by infection at the times of colicky attacks. Also, there are cases where an attendant pyretic temperature may be owing solely to a complicating disease not directly associated with the gall-bladder, but which, perhaps, may have influence in producing an attack of gall colic. For example, when an inflammatory disease located in other organs is attended with violent vomiting, and the latter mechanically incites colic of the gall-bladder containing stones.

Riedel's contention that the hydrops marks an initial stage of the gallstone colic, seems fairly reasonable in quite a number of

cases. The physical examination of such cases, and the finding at the time of operation, would lead the writer to accept many exceptions to this rule. There is notable the finding at operation of a gall-bladder, small and inoffensive looking, in a case where only a few days previously there was unmistakable evidence of a large, tender, cholecystic tumor, and where the contents of such gall-bladder were found a clear yellow bile, not an achromatic, mucous fluid.

Drawing upon analogy, it seems reasonable to assume that a gallstone engaged at the neck of the gall-bladder would excite an irritation of the wall of this organ, not unlike that observed in the pregnant uterus when its contents have become unsettled, and these act like a foreign body. The vaginal portion, previously of comparatively firm consistency, suddenly swells to large size with edematous infiltration, and the dormant uterine musculature becomes active; rapid dilatation of the cervical canal and violent expulsive pains occur. In the case of the gall-bladder, a stone wedged in its cervical canal may be supposed to bring forth similar changes, affecting both the musculature and connective tissue of the entire organ. A clinical observation bearing on one side of this question pertains to a case seen in 1882. An old Jewess, with pendulous and wasted abdominal walls, had many attacks of gallstones through twenty years. At the time of the first observation, she had a tender swelling in the right hypochondrium. In regular recurrence she had attacks of intense colic, during which there would appear a small roundish protrusion of the reddened, edematous skin over the most prominent part of the swelling. This would recede immediately upon cessation of the colic. The consistency of the protuberance, taken in conjunction with the history of the case, suggested a gallstone in transit. An incision of the skin over the protruding part brought a gallstone into view. This was, however, not projected during several pains, when it was removed with a dressing forceps. The stone was seized in like manner as the obstetric forceps grasps the presenting fetal head. Four large stones were removed in this way. A finger introduced into the opening during colic was seized and compressed as at times the hand in utero is incarcerated by firm contractions. In short, the musculature of this gall-bladder had developed mightily under a stimulus of long standing. Its power was effective in establishing a new passage, when the natural one—namely, the cystic duct—was insurmountably occluded.

In like turn an edema often develops in these cases which both occludes the cystic duct and adds to the size of the organ by infiltration of its wall and secretion into its cavity. There occurs eventually a widening out of the canal with gradual propulsion of the stone. In some instances Nature, unaided, is often engaged a long time and intermittingly in this work, and even finally may fail of accomplishing her task. The latter instance is given in a case where at operation a stone is found well down in either the cystic or common duct, firmly wedged in. It is reasonable to accept that the biliary ducts are thus capable of wide dilatation. It is not necessary to assume that in each instance the size of the stone is exclusively owing to accretions after it has descended into these channels, as commonly accepted.

Opinions of authors and practitioners vary greatly upon what size of stones can be passed by the cystic or common duct. No doubt most times large stones that were passed by bowel or vomited have left the gall-bladder through unnatural openings. Yet there is unmistakable evidence of comparatively large stones having passed by natural ways.

In conclusion, I offer a few words on the bearing such observations may have on practice. Temperature should be regularly taken in all cases of gall colic. Its presence in a case of gallstone colic may be the first definite sign of a grave disease. Every case of gall colic having temperature imperatively calls for local examination to detect evidence of inflammatory character, gangrene and pericystic involvements, or excessive enlargement and possible rupture. The persistent absence of fever would commonly indicate a state devoid of danger, and, when associated with concurrent conditions, might warrant persistence in non-surgical measures. A gall-bladder without tenderness and of not excessive enlargement also indicates a favorable course.

224 NORTH MERIDIAN STREET.

DISCUSSION.

DR. JOHN A. LYONS of Chicago, in opening the discussion, said that about four months ago a professional friend of his had blood tests made with a view to determining whether he had cholecystitis, appendicitis, or what-not, which was causing continual pain that radiated from the right to the left hypochondriac region. Numerous blood tests were made by men of eminence who had examined him. All were of the opinion that the case was one of cholecystitis. An eminent Chicago surgeon concurred in this diagnosis and operated on the patient. Operation disclosed

multiple carcinoma of the liver, the diagnosis of this condition having been confirmed subsequently by a good pathologist. He cited this case to show that it was sometimes exceedingly difficult to make a positive diagnosis of gall tract trouble.

DR. JAMES F. W. ROSS of Toronto, Ontario, had had in his experience five cases of gangrene of the gall-bladder, and had come to the conclusion that its symptoms were very definite. It needed immediate operation, just as gangrene of the appendix did. In one case no gallstones were present; gangrene had occurred without them. In two cases the gall-bladder sloughed away. The patients were so ill that it was not considered advisable to do prolonged operations. The abdomen, therefore, was opened, gauze packing inserted, Morison's pouch drained from behind, and the patient left in that way. Of the five cases, all recovered.

A symptom that impressed him was that the pulse became peculiarly irregular. The patients complained of severe pain in the neighborhood of the gall-bladder as the first symptom, and then they appeared to be desperately ill. In two cases the patients became cyanosed. The temperature was elevated several degrees, and the pulse in two of the cases became very rapid.

A few years ago he presented to the Society an instrument he had devised for the purpose of assisting in removing stones from the common duct. It had fenestrated blades intended to grasp a stone in the duct and hold it in position, while a running suture was placed, an incision made, the stone needed, and the opening closed, making the operation very easy.

DR. JAMES F. BALDWIN of Columbus, Ohio, had had an unusually large number of cases of gangrene of the gall-bladder, and had noticed the symptom to which Dr. Ross had called attention, namely, irregularity of the pulse. The last patient, from Cincinnati, who left the hospital Sunday, having been operated on three weeks before, had no elevation of pulse or temperature, but severe pain. A history was given, dating back one year, of attacks of pain, and when a Cincinnati physician was telephoned for to see the patient in one of these attacks, he thought it was clearly the appendix that was at fault. The patient was in a desperate condition, so that immediate operation was clearly indicated. Dr. Baldwin operated, going high up, as it seemed to him that there was more tenderness over the gall-bladder than the appendix. The gall-bladder was gangrenous and had ruptured. It contained fifty gallstones. He clamped it at the cystic duct, removed it, and the patient made a fine recovery. He cited another case.

He thought the symptoms in these cases were those that were manifested in grave disorders anywhere around the gall-bladder region. Perforation of an ulcer of the duodenum or of the stomach, or an acutely inflamed appendix, particularly if the appendix be higher up than normal, would give practically the same symptoms. Of his series of a dozen cases only one died.

In this case the operation was not performed until the fourth day. There was extensive peritonitis present. The operation was done in a private house at a distance and under unfavorable circumstances. If he had had the patient under his personal supervision, he thought he might have recovered.

DR. JOSEPH PRICE of Philadelphia said that the paper limited the discussion to a rather narrow zone. Colic was not common, but disease of the gall-bladder was exceedingly common. In insane asylums in the South it had been found by post-mortem examinations that thirty to forty per cent. of the inmates had gallstones, many of whom manifested no symptoms of them. He had been informed that in the female department of the Norristown Institution of twelve hundred inmates, gallstones had been found in thirty per cent. of the cases that had come to post-mortem without the patients having manifested symptoms indicative of that condition during life. The physicians connected with this institution were good diagnosticians. They had often found concealed hernias; they recognized appendicitis in these demented women, which was really a difficult thing to do. He had not found gallstone colic a common symptom.

He was glad to hear that Dr. Ross had operated on five cases of gangrene of the gall-bladder in which rupture had taken place, and had saved them all by refinement of surgical instinct, good judgment, and great skill. Drainage in these cases was an admirable thing. A rigid right rectus was commonly present in these cases. A man came to Philadelphia for a gall-bladder operation, and a few hours after reaching the city had an acute, agonizing pain. A good surgeon opened the abdomen and found a perforation of the stomach with free hemorrhage. He made a little window through the mesocolon, upset his stomach, closed the opening, made toilet and drained, and the man made a beautiful recovery.

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, confirmed what Dr. Price had said in regard to the frequency of gallstones without symptoms. During a residence in Vienna of several months he had been in the habit of going down to the autopsy room, where they had from six to twelve bodies daily, the cases having been brought in from all departments of a large hospital with thirty-five hundred beds, and the frequency of gallstones was apparent, although the patients had died from other diseases without symptoms of gallstone colic.

He had found on careful examination that a rigid right rectus muscle was an indication of gall-bladder disease. If there were no other symptoms, if there were adhesions in the pelvis to any extent, any pressure on the right rectus would give rigidity. In fact, he had diagnosed adhesions, where there was some question as to whether there were adhesions, by firm pressure in the region of the navel. If there were adhesions this firm pressure would excite pain. He made what he thought was a clever diagnosis some time ago in the case of a patient who had been examined

by several practitioners, who said there were no adhesions. She was suffering great pain. She had had two operations in the loin, and by the test he had mentioned he was able to diagnose adhesions, which he relieved by operation, and since then the patient had been well. His experience with gallstone disease was entirely associated with pathological conditions in the pelvis. His experience embraced about twenty-two cases where the patients had had gall-bladder disease, with inflamed appendages, or appendicitis. Of the last two cases he had had, one was a typical case of recurrent attacks of appendicitis, with typical attacks of gallstone disease. She had pain in the right hypochondriac region, associated with tenderness, vomiting, and icterus. The condition he found in the pelvis was one of enlarged uterus, lacerated cervix, endometritis, with a mass to the right of the right vaginal vault, and, on making an incision, after doing a curettement and repairing the cervix, he found the ovary and the appendix walled off together; there was a pus cavity, which he removed and drained, and then made an incision higher up and removed forty-nine gallstones. This was the first case in which he had found a white gallstone. Some of the stones were as large as a cherry.

DR. CHARLES L. BONIFIELD of Cincinnati, Ohio, said there was a decided difference between a pain that was due to an acutely inflamed and distended gall-bladder and one that was due to gallstone colic. Gallstone colic was always due to contraction of the gall-bladder, and this contraction might be caused by an effort of the stone to pass through the duct, or it might be caused by an inflamed condition of the gall-bladder. It was a severe, excruciating pain, which should alone be dignified by the name gallstone colic; but tenderness, soreness, and discomfort due to an inflamed gall-bladder were a different thing. His experience was that the cases that gave rise to gallstone colic frequently had small gall-bladders, without much fluid in them, and filled with a large number of stones. He believed that every patient who had gallstones was liable to develop symptoms. The presence of gallstones predisposed to infection of the gall-bladder. For a number of years surgeons had discussed the advisability of removing the appendix, whether it was diseased or not, when doing other abdominal operations, and of late years the question had arisen as to whether, when the abdomen was opened for pelvic conditions, it were wise to palpate the gall-bladder, and, if a few gallstones were present, to remove them. Some years ago he was doing a hysterectomy for a fibroid tumor for a sister of one of the Cincinnati practitioners. When he finished the operation for the removal of the fibroid he found a large number of gallstones by palpating the gall-bladder. She had had no symptoms of gallstones; therefore, he decided not to molest them. Shortly after she left the hospital she began to have severe attacks of gall-bladder inflammation. A year later he opened the gall-bladder and removed the stones.

DR. PANTZER said the discussion emphasized the important clinical fact that cholecystitis, or, if one chose to call it gallstones, and gall-bladder diseases, were second only to appendiceal disease. That if it were put in this way we could emphasize another fact clinically, that these diseases occurred without adequate recognition. Like several of the speakers, he had had a number of cases of gangrenous cholecystitis brought to him, in which a diagnosis had been made of typhoid fever or appendicitis, where the disease had developed to the stage of a moribund condition of the patient. Four of his patients were practically moribund when he made the last desperate effort to save them by drainage.

The frequency of gallstones bore no relation, in his judgment, to the frequency of gall-bladder disease, as was shown by the statistics of Riedel. The possibility of a cholecystitis gangrenosa was to be entertained in every case presenting the symptoms of grave inflammatory disease.

TUBERCULOSIS OF THE KIDNEY, WITH REPORT OF CASES.¹

BY

RUFUS B. HALL, M.D.,

Cincinnati.

UNTIL recent years tuberculosis of the kidney was regarded more as a constitutional than a local disease, more of a medical than a surgical condition; but the rapid advance in operative surgery has in this disease, as in many others, disproven that theory. A decade ago surgical treatment of renal tuberculosits was but tentative and opinions of the foremost men in the profession were at variance whether any operation whatever was justifiable. If any operation was advised, what was suitable for the various kinds of cases was a difficult problem to determine. After Klebs had demonstrated that the tubercle in the human subject invariably contain bacteria, that he could cause the same disease in animals by inoculation by the cultures obtained from the bacteria, thus stimulating other investigators, it was not long until Koch, in 1882, made known to the profession that he had positively identified the special bacillus of tubercle. After his announcement there very soon appeared an army of workers and the knowledge of tuberculosis and its ravages was known to the profession in a new light as they are understood to-day.

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

This knowledge places us in a position to study tuberculosis of the kidney from a rational standpoint, hence for the surgical treatment and the refinements in the diagnosis we are very largely indebted to the discoveries of Koch. If it were not for the knowledge thus derived, we would be groping in the dark in the diagnosis and treatment of this disease as did our forefathers. It was pointed out as early as 1882 by Coneheim that man could by means of his renal excretion eliminate the bacilli of tuberculosis, and he believed that these bacilli could be transported from the lung into the urine by the blood and, after reaching the bladder, could there excite tubercular lesions without causing injury to or infection of the kidney in their passage. Many other writers subsequently confirmed his writings. They believed that the bacillus could filter through the kidney without causing tubercular disease therein. Others, disagreeing with these views, believed that to make the excretion of the bacilli possible there must be a change in the secreting tissue whereby these tissues were made permeable, and that this change was effected by the virus of the microorganisms.

Up to the time these observations were made sufficient attention from the point of view of surgical progress had not been given to the question whether renal tuberculosis was a general or a local infection; whether from the point of view of treatment tuberculosis was an operable or an inoperable disease. Clinical knowledge acquired by a vast number of the best surgeons of to-day demonstrates the fact that renal tuberculosis is a localized affection limited to one kidney in the vast majority of cases, and a large number of the closest observers believe that if the diagnosis could be made early we could see a still larger percentage of these cases while the disease was limited to one kidney. To sustain this opinion it is only necessary to remind you that when these cases are allowed to come to the post-mortem table in at least 50 per cent. the disease is still unilateral.

ETIOLOGY.

Renal tuberculosis is due to the tubercle bacillus, which may reach the kidney through the circulation; or it may be conveyed by the lymphatic channels in that region; or the disease may extend along the walls of the ureter by continuity from the bladder; or more rarely infection may be directly communicated to

the ureter through some tuberculous focus situated outside of the genitourinary tract.

When the infection is conveyed by the circulation it may either run an acute course or a chronic one, resulting in caseation. In the latter case the caseated nodules may extend into the calyces and give rise to tubercular pyonephritis. When the disease reaches the kidney from some of the lower parts of the genitourinary tract by way of the ureter, the kidney is the last portion of the urinary system to be affected. There are believed to be other modes of infection, but from a surgical standpoint they do not concern us here. When tubercle is suspected in any case of chronic renal disease, if the urine contains pus or blood and we can detect the bacillus, we may say that the patient is suffering from tuberculosis. But our duty does not end here. We must localize it and say that it is limited to a certain organ or not, if we do our duty to our patient. In discussing this subject, I purposely speak of the disease only as met with in women.

PATHOLOGY.

Careful study of these cases teaches us that the kidney is often affected with tuberculosis without either the ureter or the bladder being involved. We also know that when the disease commences in the kidney it is prone to spread along the ureter to the bladder. Pathology shows us also that the ureter and kidney may be secondarily invaded, though very rarely so, in an ascending manner by an extension of the disease from the bladder. When the disease is of the ascending type it is very much less promising from a surgical standpoint than it is when it is first local in the kidney. This fact should stimulate us to greater effort to make a correct diagnosis early in the disease. The disease usually follows the course of the blood-vessels, and, when it reaches the parenchyma, it implants the bacilla about the vessels of the malpighian tufts. As the disease progresses and the caseous masses have sufficiently increased in size, the tissue softens and breaks through into the calyces and discharges into the renal pelvis and ureter, or they may rarely break through the fibrous capsule of the kidney and form tuberculous perinephritic abscess, which is not a rare condition, as in one of the cases reported. The discharge of the pus and bacillus through the ureter, not infrequently the latter, becomes temporarily obstructive, developing a hydronephritic kidney.

In fact, in all of the cases coming to operation, if the disease is at all advanced there is more or less distention of the kidney from the temporary blocking up of the ureter from this cause. As the disease progresses the ureter in the vast majority of cases becomes more or less involved in the tubercular process. If the disease is allowed to advance, not infrequently in the region of the opening of the ureter we will find tubercular ulcers in the bladder mucosa. The symptoms in renal tuberculosis are very characteristic if the disease is well marked, yet it must be understood that many of the symptoms are present in other conditions.

The difficulties of diagnosis are considerable, yet not insurmountable. The main symptoms are lumbar pain, dysuria, polyuria, frequent micturition by night as well as by day, pyuria with acid urine, hematuria with acid urine, the presence of tubercle bacilli in the urine, loss of flesh, night sweats, pallor, and slight elevation of temperature, especially in the evening. Pain in the loin is sometimes the first symptom complained of. It is of moderate intensity and not usually aggravated by exercise. As the disease advances the pain usually becomes greater and the patient seeks relief, so that when first seen the history given is that she has suffered pain in the loin for varying lengths of time, maybe for a few or many months, while the pain is but little if any increased in severity by delay. It is usually referred to one loin and radiates to the pelvis. The pain may be so severe at times that it resembles nephritic colic due to a stone. This is usually due to temporary obstruction of the ureter from pus, but it is not so severe as that of the pain caused from stone. Increase in the size of the kidney is very common and in many cases a definite tumor can be outlined.

THE URINE.

Polyuria is a frequent and early symptom of the disease. It may be present during some days and absent on others. When it does occur it may be accompanied by dysuria. There may be no other symptoms in the early stages of the disease, and when it occurs in an enfeebled person and no other cause could be assigned, renal tuberculosis ought to be the first disease considered. After the disease has continued for a few months, the urine contains various quantities of renal tissue. The reaction is nearly always acid and whenever we find pus in acid urine we should at once suspect tuberculosis. We may find the urine completely

clear for a short time in those cases in which there is ascending tuberculosis, on account of the temporary blocking of the ureter on the diseased side, which is more likely to occur from ascending than the descending form of the disease.

It is very important in every case of chronic renal tuberculosis, especially when a surgical operation is contemplated, to know the condition of the opposite kidney. It has been stated that in 50 per cent. of all cases coming to post-mortem one kidney remains healthy. It is more than probable if these patients could be seen early and a correct diagnosis made, that in a very much larger percentage the disease would be found to be limited to one side only, which is a very important matter from a surgical standpoint.

There are also present tubercle deposits in other parts of the genitourinary tract. The bladder is often affected. There may be old or recent tuberculosis of other organs of the body, such as the lung, pleura, or intestine. The urine should be examined carefully for the bacillus of tuberculosis, yet in more than 50 per cent. of the cases of tuberculosis of the kidney the bacillus is not found in the urine under the microscope. It is often absent in the urine in cases of primary renal tuberculosis and in cases of descending tuberculosis, if the ureter is blocked. Bacilli are sometimes detected by the inoculation experiments with the urine in which they are not found in the staining and microscopic examinations.

Frequent micturition, besides being often the earliest symptom, may for a long time be the only one. It occurs during the night as well as the day. This symptom in a person between twenty and forty years of age should always excite suspicion of the disease. Even in the early stages of latent renal tuberculosis, in many cases there is a slight elevation in the evening temperature. If there is septic infection, the temperature may rise to 103° or 104° . Loss of flesh, loss of appetite and sallow or pale skin are symptoms incident to the general anemic state which may precede any local urinary disturbance, but they are more likely to occur after tubercular disease has existed for some time.

Intermittent pyonephrosis from partial obstruction of the ureter is an important clinical fact, as some rough knowledge of the state of the opposite kidney may be obtained by examination of the urine passed in the intervals between the attacks of pyuria. The early diagnosis of renal tuberculosis is of very great

importance and, if this be made, the patient may be saved the necessity of subsequent nephrectomy by being sent to a suitable climate and being placed under proper dietetic and hygienic conditions. The diagnosis is difficult, but not insurmountable with the present refinement in the diagnosis; if we study the clinical history carefully and patiently interpret it, we will usually be rewarded by the ability to form a correct diagnosis.

When there is frequent micturition, polyuria, or hematuria in an acid urine, together with the elevation of the evening temperature; when pyuria is present and the hemorrhage not influenced by rest or movement; when the patient is pallid and losing flesh, and if there is fullness or a tumor with or without pain in the renal region and tubercle bacilli is found in the urine, we have an assemblage of symptoms which are sufficiently characteristic and positive. We must not overlook the fact, however, that all or many of these symptoms may be absent in the early stages of the disease and occasionally throughout its whole course. In the early stages of the disease it is difficult, even impossible, in the absence of bacilli of tubercle to diagnosticate tubercular kidney from renal calculus. Then more reliance must be placed upon the other signs of tuberculosis. In stone there is more likely to be hematuria brought on by exercise or exertion, which ceases on resting or lying down. The pyuria is generally intermittent; whereas, in tuberculous kidney, blood is usually found only in small quantities and the hematuria is not aggravated by exercise and does not abate by rest. The purulent urine is continuous, excepting when the ureter is occluded temporarily.

The use of the x-ray is of great value and should not be neglected in any case in which the question of stone is at all in doubt. Cystoscopic examination of the bladder should be made in all cases. The ureteral orifice of the bladder will be found inflamed and reddened on the affected side in marked contrast from the healthy side. Second, the urine should be collected separately from each kidney for examination after irrigating the bladder with a normal salt solution; then by means of the Harris instrument it may be collected without catheterizing the ureters and, in many cases this will suffice. If it does not, we must catheterize the ureters by passing the ureteral catheter a short distance only in each ureter and collect the urine separately for our examination.

The cystoscopic examination of the bladder is a very important

matter in the diagnosis in all cases. It often clears up the doubt at once and should not be neglected. On several occasions I have been able to observe clear urine ejected into the bladder from a healthy kidney, while at the same time on the opposite side I could see the pus and urine being discharged from the diseased kidney into the bladder from a greatly inflamed ureteral orifice. I report only three operative cases selected from my work as illustrating the benefits derived from surgical operation even when the disease is far advanced. I will only make a very short report of each because my paper has already assumed undue length.

CASE I.—Mrs. B., aged thirty years; mother of one child; Portsmouth, Ohio; patient of Dr. Berndt. She had suffered for a year or more with an irritable bladder, with a gradually increasing amount of pus in the urine, and frequent desire to urinate. At the time of the operation she could not retain her urine longer than two hours at any time during the night or day, and in the day time she was frequently compelled to empty the bladder as often as every half hour. Her rest at night was greatly disturbed by frequent calls to empty the bladder. She had lost many pounds in flesh, was anemic and feeble. About the time she commenced to notice the irritable bladder she also observed a discomfort in the region of the right kidney. This discomfort augmented as the amount of pus increased. At times she would suffer quite severe attacks of pain, lasting an hour or two, and the kidney, which was somewhat enlarged, would be perceptibly more tender and enlarged. For a period of two or three months before the operation the kidney enlarged rapidly, so that at the time of the operation it was much larger than a cocoanut, and she was suffering almost daily attacks of pain. The specimen of the urine, of about a pint, voided on the day of the operation was one-third pus, in bulk. The operation was made July 28, 1905, by making an incision in the loin, exposing the kidney, with the object of saving it, if this should be deemed advisable at the time of the operation. But, when the kidney was exposed it was found densely adherent over its entire surface, and almost entirely destroyed by the diseased process, and for this reason it was removed. The patient made an easy and rapid convalescence without any complications, excepting a sinus, which remained for several weeks, probably due to the diseased ureter. A sinus is not unusual when the ureter is much involved in the tubercular process, but it closes after a few weeks. The pus disappeared

from the urine at once; the patient has regained her usual health. The irritability of the bladder disappeared in a few weeks and has not returned.

CASE II.—Miss B., age 20 years; patient of Dr. Joseph Eichberg; was seen in consultation on June 28, 1906. A previous diagnosis of tuberculosis of the right kidney had been made by her physician and an operation advised. This patient had suffered from an irritable bladder for two years. Early in her history, Dr. Eichberg, who was her physician at the time, advised an operation for exploration and drainage of the kidney, with the hope that the organ might be saved, but the family objected to an operation and changed physicians. The new physician called, treated the patient the way the family wished it, that is, without an operation. Her condition became worse constantly, and finally was so bad that they again called Dr. Eichberg.

The patient now was much emaciated, suffering greatly from the irritable bladder, with frequent attacks of pain in the region of the enlarged kidney, and almost one-third of the bulk of the urine was pus. Dr. Eichberg urged an immediate operation, and the family consented. At the time of the examination the kidney was as large as a cocoanut and very sensitive upon pressure, the patient suffering from sepsis in addition to her other illness. She entered the Bethesda Hospital, June 30, was operated July 2, and the right kidney, which was studded with abscesses, was removed. There was also a perinephritic abscess holding several ounces of pus. The pus disappeared from the urine at once. The irritable bladder disappeared within a few days, and the patient was greatly relieved. She recovered promptly, and has regained her usual flesh. She is enjoying perfect health. There is no pus in the urine and she is perfectly comfortable so far as her bladder symptoms are concerned.

CASE III.—Mrs. F., age 31 years; mother of two children; was referred by Dr. Rush of Greenville, Ohio. The patient complained of an irritable bladder, the desire to empty the bladder being constant. She could rarely go one hour either night or day without voiding urine. She was greatly emaciated, having lost thirty pounds in flesh. The patient's home was twelve miles distant from Dr. Rush, but she had been under the charge of another physician for five months. She had recently consulted Dr. Rush, who recognized the kidney lesion as the cause of her irritable bladder, and referred her to me. The right kidney was greatly

enlarged; the patient had frequent attacks of pain in the region of the kidney, which would last for an hour or two, but no such pain as we see where the patient is suffering from stone in the kidney. The pain is not so severe in this condition, neither is it so prolonged. Of a specimen of urine, about one-third of its bulk was pus.

After the usual examination an operation was advised, the patient entered the hospital November 4, and was operated on two days later. Upon cutting down on the kidney I found it everywhere adherent. It was enucleated and removed, as the disease was so extensive that but little kidney tissue remained. The pus disappeared from the urine at once; within twenty-four hours the irritable bladder had entirely subsided. Excepting a sinus, which remained several weeks, the patient has had an uninterrupted recovery, and is now enjoying her former good health.

These cases illustrate a group of patients that we not infrequently see referred as cases of bladder disease. Almost all the patients that I have seen with tubercular disease of the kidney were treated for weeks or months for other than the real affection. It would be well to always suspect tuberculosis of the kidney in patients complaining of an irritable bladder, in which some other good cause cannot be found to account for their condition. In fact, this should be the first thing suggested to the physician in all patients in middle life who complain of an irritable bladder coming on suddenly where a definite lesion cannot be found to account for it, especially if the urine contains pus and is acid. If the physician would assume that it was the kidney he would look for tuberculosis, and when once suspected it is not so difficult to diagnose.

If the tubercular condition could be recognized early, an operation performed, and drainage established, we might be able to save many of these kidneys which, neglected, will in the course of a few months be destroyed by the progress of the disease.

628 ELM STREET.

DISCUSSION.

DR. EDWARD J. ILL of Newark, N. J., said the subject of tuberculosis of the kidney was one he had been very much interested in for a long time. The first case he saw dated back eighteen years. The patient was a young girl who had tuberculosis of the left kidney and ureter. With that tuberculosis she studied medicine, took charge of a home for crippled children, the children living mostly out-of-doors, and this woman was perfectly

well to-day, in that no tubercle bacilli could be found in her urine.

Another case seen twelve years ago was perfectly well to-day. He did not cite these cases to say that they should not be operated on, but rather the reverse. In the last five or six years he had operated on six cases, removing the kidney and ureter. These patients were all living except two, one of whom died of sepsis at the time of the operation, while the other died of lung trouble which had previously been overlooked.

As to drainage of tubercular cases, all the cases he had seen would not have recovered by instituting drainage. Tuberculosis of the kidney usually manifested itself in multiple abscesses, small spots penetrating all through the tissue. It was possible, if the case was seen sufficiently early, to find a single abscess, but in none of the cases he had seen would drainage have sufficed. On the other hand, we were so apt to infect the surrounding tissue by drainage that he did not think it was wise to resort to it. He had gone to an extreme perhaps in this, that when he had removed the ureter with the kidney, he had not cut the ureter off with knife or scissors, but with cautery, so as to destroy thoroughly the ends. Again, infections of the bladder, tubercular ulcerations of the bladder, usually got well if the origin of the disease was removed.

DR. H. O. WALKER of Detroit, Michigan, expressed himself as being in accord with what had been said with reference to drainage of the kidney for tuberculosis. He had had some successful results by so doing. The drainage should be very thorough. He could recall several patients with kidney tuberculosis who were now alive, and upon whom he operated many years ago.

DR. O. H. ELBRECHT of St. Louis, Missouri, cited two cases he had had, one of which he drained, and the other he did not drain. One of his patients died from miliary tuberculosis eight weeks after the operation. In this case the kidney was large, full of pus, and was drained. In two or three weeks following operation she manifested symptoms of miliary tuberculosis. This was a case in which the kidney could not have been removed without the pus coming in contact with the wound. In the other case the abscesses were small, so that a nephrectomy was done without puncturing the various abscesses to find out what they were, and protecting the wound with gauze. After taking out the ureter the wound was closed, and that patient got well.

DR. JOSEPH PRICE of Philadelphia expressed himself as being a little surprised that no one had referred to the importance of cystoscopic examinations in these cases whenever there was any suspicion of ascending or descending infection. As surgeons, they went to cities and towns to do renal operations, but found that the practitioners had not made such investigations or examinations. He was satisfied that where there were parenchymatous destructive changes the kidney should be removed. It was folly to attempt drainage of a kidney that was honeycombed with tuber-

culosis. The results from operations in cases of bladder infection and from ascending infection of the kidney were excellent. Two years ago he had a peculiar experience, in that he received four patients whose pathological kidneys had been anchored. He had found this a common practice. There was a perceptible increase in the size of the kidney, and the practitioner or surgeon, becoming alarmed, had fixed or anchored a so-called floating kidney, but which was pathological. In one case he simply incised the kidney at the residence of the patient because the surroundings and assistants were not sufficiently good for the removal of the organ. That woman came to him some months later in Philadelphia to have her kidney removed. She made a good recovery. He strongly advised the use of iodoform and iodoform drains in cases where but one kidney was involved. He still had confidence in that treatment, although it was old.

DR. JAMES F. W. ROSS of Toronto said the question he was interested in particularly was nephrotomy *versus* nephrectomy. It was unpleasant to do a nephrotomy, and then find out afterwards it was necessary to perform a nephrectomy. It was difficult to say whether to do a nephrotomy first or to do a nephrectomy primarily. English authorities some years ago put forth the dictum that nephrotomy was a primary operation, and that nephrectomy was secondary in cases of tuberculosis of the kidney. He had followed that plan to some extent in his cases, but had not been able to satisfy himself as to the condition of the other kidney. It had been said that tuberculosis of the kidney was generally bilateral; in his experience that was not so. In some cases he had performed nephrotomy, drained the kidney abscesses, and had taken out the kidney later, and the patient recovered. The question arose as to whether he should have done nephrectomy in the first place.

He had had one case of cyst of the kidney. In drawing the kidney out it looked like a congenital cyst. He declined to remove the organ because one-third of the structure was healthy. Six weeks later he operated on the other kidney, although at the time of the primary operation there was no sign of disease of that kidney. So in cystic disease of the kidney the surgeon, he thought, should be careful before he decided to extirpate the kidney at the first operation.

As to the cases that yielded to drainage, it was a question in the minds of some as to whether they were really tubercular or not. He had one patient now, a woman, who had had an abscess of the kidney for eight months. She had cystitis, ulceration of the bladder, and subsequently an abscess of the kidney developed. He drained the kidney; healing had taken place; the symptoms of cystitis were disappearing, but he was not sure that this was a case of tuberculosis of the kidney.

DR. JAMES F. BALDWIN of Columbus, Ohio, said the point at issue was largely one of early diagnosis. Dr. Hall mentioned one point which the speaker desired to emphasize and suggest to

the members for further observation, namely, nocturnal frequency of micturition was not only equal to that during the day, but increased. This he had found in so many cases that he attached considerable importance to it. This symptom had enabled him to verify the suspicion of tuberculosis.

Recently, in looking up this subject in preparing a paper in connection with other matters, he found statements made with excellent authority that in ninety per cent. of the cases, as they came to surgeons, only one kidney was affected; not fifty per cent., as found at autopsies.

While he had only practised nephrotomy in two or three desperate cases in which he thought nephrectomy would have turned the tide against the patients, still he felt on general principles that nephrotomy was non-surgical, yet these cases might get well, even if distinctly tubercular. When we removed a tubercular kidney the tubercular ulcers of the bladder would recover in the majority of cases. It was known that a tubercular ureter, after the kidney was removed, might get entirely well. Therefore, why should not a tubercular abscess of the kidney, if we were sure there were but one or two, and we had drained them, heal just as tubercular abscesses heal in the lungs and elsewhere?

DR. HALL, in closing the discussion, said that in a number of cases, if the diagnosis could be made early, a simple operation would relieve them and save a kidney. That statement was based on personal observation in three or four cases in which he deliberately operated, opening up the loin, with the exception of removing the kidney, and found not only an abscess outside of the kidney, holding several ounces or possibly a pint of fluid, but a small abscess in the periphery of the kidney not larger than the end of one's thumb.

THE TOXEMIA OF PREGNANCY AS OBSERVED BY THE GYNECOLOGIST.¹

BY

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THE success of the physician and surgeon at the present time depends upon proper appreciation of the personal equation of his patient. His advancement will be in direct ratio to his ability to grasp the individual resistance, and in the treatment of disease he will be governed accordingly. This fundamental thought serves as a foundation for a consideration of the lowered resistance found

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in many pregnant women, which is caused by a disordered condition of the blood, and has been well termed the "Toxemia of Pregnancy."

The advancement made in the knowledge of these complications becomes evident when the scant literature found at the beginning of the last century is compared with that existing at the present time. This condition was then briefly referred to as pernicious vomiting, or the fits of pregnancy, with little knowledge of the etiology. As a result of each succeeding year of research a foundation has been laid which will result in the prevention to a large degree of these much-dreaded complications. There still remains much of practical importance which has not received the attention warranted by our present knowledge.

It is not within the province of this paper to enter deeply into a consideration of the etiology of the various forms of toxemia and their apparent relationship, but the object is to call attention to the lowered resistance of the pregnant woman as a result of their presence, and emphasize the great necessity for care and attention throughout the pregnant state. In order to make the subject clear a brief consideration of the various forms of toxemia is necessary. It may be defined as a state of the blood caused by either an insufficient action of the liver, or by some disturbance in the earlier processes of metabolism as a result of the pregnant condition. We include in this subject not only the acute toxemias, as pernicious vomiting and acute yellow atrophy according to the grouping by Ewing, but also the milder manifestations. It is characterized frequently by symptoms mild in character, but marking occasionally serious and even pernicious affections, such as acute yellow atrophy, pernicious vomiting and eclampsia—conditions which, without doubt, are closely related. The fulminant type, as expressed by acute yellow atrophy, is undoubtedly toxemic in its origin.

Less attention has been paid to the study of hyperemesis and other disturbances during pregnancy than to eclampsia, a name which suggests at once to us convulsive seizures. All cases of pernicious vomiting are not autotoxic, but that a large proportion of them are due to toxemia cannot be disputed at the present time. It is true that it may be the result of local disease, for example, an ulcer of the stomach, gallstones, tubercular peritonitis, acute lesions of the kidneys causing suppression of the urine, or even obstinate constipation. Local disease of the uterus, such as endo-

cervicitis or displacement, may induce persistent vomiting. After a careful examination, the result of which eliminates these local lesions as etiological factors, we are safe in considering its origin toxemic.

Ewing and Wolf believe that our present knowledge points to a single or to closely related types of metabolic disturbance as the fundamental factor in all forms of the toxemia of pregnancy. There can be no doubt that the mild and fulminant cases occurring during the early months are similar in nature, and that many cases in which persistent vomiting occurs early in pregnancy develop preeclamptic symptoms in the later weeks. It is of interest to note here that the pathological findings in some cases of pernicious vomiting and acute yellow atrophy differ so little from eclampsia that it would seem that whatever is finally determined to be the cause of one, must have an important bearing upon the other. We know that these convulsions are but the climax of a condition which, as a rule, has been gradual in its development, and in the majority of cases gives timely danger signals, which if appreciated and properly treated will greatly lower the present mortality.

We are all familiar with the many theories which have been suggested as the cause for these complications. The theory which seems the most reasonable, and the one which is becoming more widely recognized, was first advanced by Fehling. He believes the intoxication is of fetal origin, and that the excretions of the fetus are carried through the placenta into the blood of the mother. Examinations conducted by Dienst lead him to believe that those who are searching in both the organs of the mother and the fetus are nearing the truth. Autopsies upon fetuses from eclamptic mothers shortly after delivery showed chronic nephritis, parenchymatous inflammation of the heart and liver, and universal thromboses. The maternal blood contained an abnormal amount of fibrin. He regards the diminished eliminating power on the part of the mother leading to the retention and absorption of the fetal waste products as the primary cause of eclampsia, and believes that all conditions which interfere with the eliminative organs tend to precipitate an attack.

Mowton favors the fetal theory as the cause of eclampsia. He says that autopsies reveal to us certain changes in the tissues of both mother and child which can only be explained through the presence of an abnormal amount of toxin in the blood. The ex-

cretory organs of the mother having undergone changes consequent upon pregnancy, are impaired in their capacity for performing their work in a normal manner. If they are able to perform their functions in this impaired state the subject remains well, but should they be unable to do so a surplus of toxins collect in the blood and eclampsia results. This theory is supported by two facts: first, that eclampsia occurs more frequently in twin pregnancies; second, that the death of the fetus *in utero* diminishes the symptoms of threatened eclampsia. He does not believe that postpartum eclampsia refutes the fetal theory, but claims that the changes resulting from the toxemias remaining in the maternal organs are sufficient to produce it.

It remains to be learned whether these disturbances are caused by an excess of poison eliminated from the fetus, to the effect of these poisons upon the liver and the earlier processes of metabolism, or to a deficient action of the excretory organs of the mother rendering them incapable of the extra work thrown upon them as a result of the pregnant condition. This theory has been disputed, but it seems the most reasonable of all. How the child can grow and develop within the uterus without disposing of the end products of metabolism in some way or other is a problem difficult to understand. Disturbance of the organs of excretion in the child immediately after birth results seriously. If this be true, then, certainly there must be some provision for these functions during intrauterine life. This being acknowledged, a good working basis is established which suggests a definite line of treatment.

The first and most important factor in the consideration of these complications is to rid our minds of the idea that the milder symptoms are physiologic and to be expected. There can be no doubt that pregnancy becomes a pathologic state in many women. This may sometimes be attributed to a susceptible condition of the nervous system, but in the majority of cases is doubtless due to the inability of the liver and excretory organs to perform the extra duties imposed upon them during the pregnant state. That the degree of toxemia varies is unquestionably true, and that it is present in a great many pregnant women to a slight degree is demonstrated by many symptoms. The blood during pregnancy is often in a state of anemia. That these changes are due to toxemia has been disputed on the ground that pregnancy is a physiologic and not a pathologic condition. That pregnancy

is physiologic should be true, but owing to the influence of many factors, such as civilization, climate, diet, and the like, it must be admitted that the pregnant woman is seldom in a state of perfect health, and that her condition leans toward anemia and poverty of blood, and must be treated accordingly.

The urine has long been looked upon as the best index in calculating the severity of the toxic process. Many cases of severe toxemia occur, however, without the presence of marked urinary symptoms, and sometimes the danger is not revealed in the urine until long after the presence of other clinical signs which should have directed our attention to the danger of toxemia. Chemistry will undoubtedly come to our assistance in the detection of substances which are present early in the disturbance. The amount of ammonia nitrogen and the proportion it bears to the total nitrogen, the tests for leucin and tyrosin, acetone, diacetic acid, and the sulphates are now being carefully estimated. It remains to be proven whether these tests will give us an idea as to the severity of the toxic process. Edgar, in a paper read before the Medical Society of the County of New York, states that in his opinion a study of the urine has not only a diagnostic value, but that it also points the way to prognosis and treatment. During pregnancy urinalysis enables one to determine that the urine is nontoxic in character; that a given case of persistent vomiting is toxemic in its character; that a patient is in the preeclamptic state of the toxemic or nephritic variety; that a given eclampsia is nephritic or toxemic; and, finally, that after delivery it is possible to forecast the tardy or prompt recovery from a toxic or nephritic condition.

The urine of a normal pregnancy should not be persistently small in quantity. The urea output should not be persistently low, and it should not contain albumin, casts, or excessive quantities of indican. The persistent vomiting of pregnancy is with few, if any exceptions, toxemic in character, as shown by faulty urinary excretion of nitrogen. The fact that the urea output is lower than normal in a large percentage of cases is not without significance. Such examinations of the urine necessitate the aid of the chemist, and while such care is unnecessary in every pregnancy, there are times in the presence of clinical symptoms pointing toward toxemia when it is very essential to have a thorough knowledge of the clinical constituents of the urine. We should, however, consider the analysis of the urine as being only part of

an examination, which includes the other organs of excretion and the general condition of the patient as well.

In considering this subject of toxemia, the object is to emphasize the fact that these manifestations, such as pernicious vomiting and eclampsia, are but the result of conditions which, as a rule, have gradually developed, and that previous to the onset of the serious symptoms by which they are characterized, there has been a gradual development, which continues to the serious stage if allowed in some women, while in others, owing to a more powerful resistance, it is held in check, but that it may be severe enough to seriously impair the process of metabolism, and thus render the patient more susceptible to many other complications which frequently accompany pregnancy and the puerperium, is beyond doubt.

PUERPERAL SEPSIS.

That many dangerous complications are liable to develop after delivery in these cases, as a result of a previous toxemic condition, is a fact that has not received the attention which its importance merits. It would seem that the additional burden thrown upon the eliminating organs, particularly the liver in its effort to dispose of the large quantities of waste products which find their way into the circulation as a result of the rapid changes in the uterus, still further lowers resistance. This being so true in the severe forms of toxemia, its consideration becomes equally important in cases of the milder type. Is the resistance of the patient able to care for this additional load? In the opinion of the writer this is a matter which depends largely upon the personal equation, and it is at this time that good resistance is so necessary. Jordan, in an excellent article upon "The Toxemia of Pregnancy," has emphasized this danger.

There are many cases which do not have persistent vomiting, nor do they develop eclampsia, and yet present many toxemic symptoms, such as headache, lethargy, insomnia, irritability, nausea, visual disturbances, and slightly elevated blood pressure, with perhaps some of the urinary disturbances above indicated. These are mild cases and respond to treatment, which consists of elimination, rest, and diet. If neglected, symptoms of this kind may become serious in their manifestations, and there is much greater danger of infection at delivery as a result of the lowered resistance than when the eliminative organs have been function-

ating normally throughout pregnancy. These facts should be kept in mind when delivering a woman who gives a history of a stormy time throughout her pregnancy, and great care should be taken, not only at the time of delivery, to prevent sepsis, but throughout the puerperium careful attention should be given to the proper involution of the uterus and its supporting ligaments. It is apparent to the gynecologist, in reviewing the history of his patients, that subinvolution of the pelvic organs frequently follows pregnancies which have been accompanied by signs of toxemia, and that its importance as an etiological factor should not be overlooked.

While there are many conditions bearing an important relationship to infection, the writer has observed for a long time that cases presenting the milder symptoms of toxemia during pregnancy were slow to convalesce after delivery. We have all seen cases of severe infection under the most favorable surroundings, and were at a loss to understand the cause. We know that virulent organisms swarm upon the vulva, that they are present in the uterus itself in cases which run an apparently normal course. This can only be explained by the fact that the individual resistance is sufficiently strong to withstand the attack of these organisms in one case, but for some reason is unable to do so in another. In the graver forms of toxemia we are surprised if infection of some kind does not occur. This being true, it is easy to understand why it may occur oftentimes when the toxemia previous to delivery has been but moderate in its severity, and doubtless overlooked by the obstetrician.

GALL-BLADDER COMPLICATIONS.

When we consider the degree of importance which has been given to an insufficient action of the liver as a causative factor in the toxemia of pregnancy, it is surprising that so little can be found in literature concerning affections of the bile passages during pregnancy and the puerperium. It seems reasonable that the extra work thrown upon this organ may impair its function and predispose to local changes as the result of the added stress. When the frequency with which women suffer from gallstones is considered, together with the fact that many reliable observers are convinced that pregnancy and the puerperium favor the occurrence of biliary colic, it is strange that so little attention has been paid to the history of patients suffering from these complica-

tions. The observations of the writer in a number of cases of cholecystitis lead him to believe that in many of these patients it has developed in the presence of toxemic symptoms, and that complications such as cholecystitis and empyema of the gall-bladder have been the direct result of an overworked liver caused by the toxins of pregnancy; in other words, lowered resistance plus the presence of bacteria. In analyzing the history of several cases, marked toxemic signs were found, such as nausea, vomiting, headache, and the like, at some time during the course of pregnancy.

If we accept the claim of Bouchard that the blood during pregnancy is toxic, we must necessarily look upon the liver as an essential factor in eliminating these poisons from the system. In ordinary health this organ in many people is scarcely capable of performing its duty. When we add the toxins of pregnancy to those of ordinary metabolism, it is not surprising that the liver cells become impaired and unable to perform the extra work imposed upon them. Unfortunately, we know but little of the pathology in the earlier changes, because the patients recover and autopsies are not obtainable. We do know, however, that degeneration and necrosis of the parenchyma of the liver is found post-mortem in patients dying from eclampsia, acute yellow atrophy, and similar conditions. It certainly is not necessary for necrosis of the liver to occur before we admit the presence of changes which may be sufficient to interfere seriously with its function.

The action of the liver cells is necessarily below normal, and the bile eliminated under such conditions is an unknown quantity. It has been shown that living organisms are eliminated with the bile, and in that way may be transmitted to the gall-bladder, where, if a suitable field for incubation is found, complications may result. This may be an abrasion of the mucous membrane, or their development may be due simply to the lowered resistance of the local structures. The severity of the complications may vary from a simple cholecystitis resulting in the formation of gallstones to an empyema of the gall-bladder. Research has demonstrated that bacteria are present in the bile in cases operated on for gallstones in a large percentage of the cases.

We must admit that the general conditions which determine the formation of gallstones is as yet uncertain. There is no definite evidence that gallstones are formed by derangements in metabolism which are not accompanied by the presence of bacteria in.

the gall-bladder. On the other hand, we know that the cholesterol of the bile can be increased by local irritation without the presence of infection, and it is quite reasonable that local conditions, sufficient for such increase, may arise from disturbed metabolism. It is difficult to explain the reason for the development of calculi in intrauterine life as evidenced by their presence in still-born infants. The alimentary canal in the new born is sterile, and it would seem that the only logical reason is stagnation of bile. After all, while a disturbance in metabolism may not be an essential factor in the production of gallstones, there is no evidence that such disturbances may not modify the composition of the bile, and thus play an important part in the predisposition of such complications.

According to the statistics of Schroeder, gallstones occur almost five times as often in women as in men, and ten times oftener in women who have borne children than in those who have not. In his autopsies, which are under the direct supervision of Recklinghausen, 90 per cent. of the women who had gallstones had borne children. Articles and case reports by the following men cover the literature of cholecystitis complicating pregnancy and the puerperium to the present time:

Vineberg refers to fifty-one cases of biliary colic collected by Berline-Hering, in eleven of which the first attack occurred during pregnancy. In four the first attack followed an abortion, and in the remaining thirty-six cases the first attack followed labor in periods varying from one day to one month. Schauta believes that pregnancy and the puerperium favor the formation of the gallstones. Naunyn also concludes that pregnancy favors the formation of gallstones. He believes it does this by the mechanical obstruction to the flow of bile through the ducts as a result of the restricted movements of the diaphragm. Skutsch attributes the attack of biliary colic to the change of abdominal pressure, thus favoring the passage of calculi from the gall-bladder into the ducts.

Vineberg says: "Is it not likely that the outbreak of acute cholelithiasis during the puerperium is favored by not allowing the parturient woman to have a movement of the bowels during the first three days of the puerperium and by keeping her in the dorsal position for at least the same period?"

Potocki reports the following case: Patient, age 33, strong and robust; during the ninth month of pregnancy she was seized with

pain in the right hypochondriac region, accompanied by nausea, vomiting, tympanites, high temperature, and a tender swelling in the region of the gall-bladder; labor began, and he decided to deliver her before operating. A cholecystotomy was performed the following day, and gall-bladder found filled with pus and quantities of minute calculi.

Eierman reports a case of cholecystitis following labor, accompanied by jaundice and frothy urine. No stone was found. He says this complication is not infrequent, and he attributes it to the pressure of the uterus and the disturbance of the circulation during pregnancy, leading to stasis of the bile with possible formation of stone. After birth, the pressure being removed, the stone started down the duct. Davis reports a cholecystectomy in a fifth pregnancy at seventh month. The history of gall-bladder disease in this case antedates the first pregnancy and is of no importance in the consideration of this subject.

Willien reports a case of cholecystotomy occurring in the third month of pregnancy, stones being removed from the common and hepatic ducts with recovery of the patient. Vineberg reports two cases of cholecystotomy performed nine and ten days, respectively, following delivery. Both cases were thought to be due to sepsis by the attending physician, owing to the severity of the symptoms and the absence of the classic signs of cholecystitis.

Christian refers to two cases of cholecystitis; one occurred four days after delivery, and the second eight days before delivery, which began at the usual time. Doloris reports a case during pregnancy. Rose, Pinaud, Barrillion, Villard and Gelibert, Rudaux and Van Engelen report cases. Dreyfus Brisac mentions two cases reported by Willemin, one a woman who had an attack of biliary colic after two labors which were nine years apart, and another in whom an attack of cholecystitis followed each of four labors. Attacks of this character did not occur in these women at any other time. Huchard gives a résumé of twenty-two cases of biliary colic occurring during pregnancy and the puerperium.

We note, in reviewing the histories of the patients above referred to, that the only reasons which have been advanced for the development of these complications are constipation and mechanical obstruction to the outflow of bile. Toxemia is not referred to as an etiological factor, and no knowledge is gained from the history as to the presence or absence of toxic symptoms. That cholecystitis occurs during pregnancy and the puerperium as

seldom as the literature would lead us to believe is doubtful. That many cases are not recognized, but diagnosticated as some other condition, especially during the puerperium is evident. Owing to our lack of knowledge upon this interesting subject, is it not wise to direct our attention to the necessity for greater care in the study of this complication when it occurs. During the puerperium much greater activity of the liver cells occurs in order to dispose of the additional excrementitious material incident to involution. In this effort it is quite reasonable that the bile may lose some of its protective qualities, and it is true, here as elsewhere, that any factor which lowers the normal resistance may increase the susceptibility to infection. It seems strange indeed that these complications are not more frequent when we realize the large majority of women who struggle through pregnancy unaided, and with little consideration for the necessity of this extra effort on the part of the liver.

A careful review of the history from the beginning of the pregnancy should be made to determine if possible what the important factors are in the etiology, and by what means they can be avoided. It is with the hope of stimulating further research in this direction that the following cases are reported:

CASE I.—Mrs. F., referred by Dr. Stevenson. This patient gave the following history: age 23, primipara, family history negative, health had always been good until she became pregnant. States that she never had pain in the abdomen of any kind. She began to vomit early in pregnancy, and continued at intervals during the entire course, suffered considerably from headache during the latter months; limbs and face were badly swollen, and states that she was miserable from the beginning until the end of pregnancy. No satisfactory report as to the condition of the urine could be obtained. Three days after delivery she was seized with severe pain in the abdomen accompanied by elevation of temperature. This attack continued for some days and finally subsided. Since this time she has had recurrent attacks of severe pain in the region of the gall-bladder, and has never been free from pain at any time since the first attack. She is unable to perform work of any kind. Examination five months after delivery revealed the following conditions: Great tenderness and pain on slightest pressure over region of the gall-bladder. Right rectus muscle rigid. On account of the muscular rigidity and elevation of temperature the diagnosis of empyema of the gall-bladder was

made. She entered St. Francis' Hospital and was operated upon two days later. The gall-bladder was distended, containing at least three ounces of pus. Two small gallstones, so friable that they crumbled upon removal, were present. Gall-bladder drained. Recovery.

CASE II.—Cholecystitis developing on the 20th day of the puerperium. Mrs. M., referred by Dr. N. R. Graham; history as follows: age 28, multipara, fourth pregnancy. Always in good health until March, 1907, when she was sick for several weeks. She was then in the seventh month of pregnancy. The nature of her illness at that time was hard to determine. She recovered from this illness, and was apparently well until twenty days after delivery, when she was seized with severe pain in the right upper quadrant of the abdomen. The pain has been continuous since that time; upon examination a distended gall-bladder was easily outlined. Cholecystotomy, June 18, 1907. Upon opening the abdomen all evidence of a recent inflammatory process was present, the omentum covered, and was glued to an inflamed gall-bladder; sixty-seven stones were removed, gall-bladder drained. Recovery.

CASE III.—Mrs. H., age 36; three children. This patient has always had a stormy time during her pregnant condition. Vomited during the early months, and had all the premonitory symptoms of eclampsia during the latter weeks—headache, swelling, high blood pressure, and low urea output. During her second pregnancy three years ago she developed symptoms of cholecystitis. An acute attack occurred five days after delivery, lasting for one week. Since that time she has had recurrent attacks of considerable severity. While we have not been permitted to verify our diagnosis by operation in this patient, gallstones are undoubtedly present.

CASE IV.—Mrs. F., referred by Dr. Rohan, age 38. This patient gives a history of no illness until her first pregnancy ten years ago. During the latter weeks of pregnancy many toxemic symptoms occurred, such as headache, swelling of face and extremities, and the like. Six days after delivery she became very ill, and her trouble was diagnosticated as peritonitis. The pain was most severe in the upper right quadrant of the abdomen, and the subsequent history justifies the diagnosis of acute cholecystitis, which may have been complicated by peritonitis. She recovered from this attack, but since that time has had recurrent attacks of

severe pain, accompanied by jaundice. When seen by the writer a diagnosis of cholecystitis, together with a stone in the common duct, was made. Patient was operated upon September 5, 1906. The gall-bladder was found surrounded by many dense adhesions, contracted, walls very thick, and filled with calculi. A large stone was located in the lower end of common duct. The gall-bladder was removed. In its removal an accident occurred which may be worthy of mention. Owing to the dense adhesions and displacement of the organs, it was impossible to recognize the structures about the base of gall-bladder, and in the effort to tie off the gall-bladder the ligature was carried around the lower end of the hepatic duct, and almost two centimeters of the common duct was removed before the accident was discovered. However, after freeing the lower end of the duct it was brought up and sutured to the hepatic duct, end to end. A rubber drainage tube was carried to the line of approximation and held in place by suture. Patient made a good recovery.

CASE V.—Through the kindness of the attending surgeon, Dr. Ely, under whose service this patient came, I am permitted to report it. Mrs. P., age 22, primipara, health good previous to pregnancy. During first four months she suffered continuously from nausea and vomiting. Health was not good during whole period of pregnancy, especially during the latter weeks. She was very thirsty, had no appetite, and suffered from headache. Her labor was uneventful. Six days after delivery she was seized with severe pain in the region of the gall-bladder, which has continued until her admission to the hospital, which was four weeks from beginning of the attack. She presented the following symptoms upon admission: complains of severe pain in upper right quadrant of the abdomen, muscular rigidity very pronounced, and great tenderness over the region of the gall-bladder. Temperature ranges from 100° to 104° ; no jaundice. Diagnosis, suppurative cholecystitis. Operated upon by Dr. Ely, April 8, 1907; gall-bladder distended and full of pus; but one very small stone of recent formation present; gall-bladder drained; recovery.

On account of an insufficient history, the lack of definite knowledge as to the urinalysis and careful observation by the obstetrician in these cases, proof is somewhat lacking that the gall-bladder complications were a result of toxemia. The symptoms which occurred during the course of pregnancy in these patients can scarcely be attributed to the presence of gallstones or to

disease of the bile ducts previous to conception, because the patients were in perfect health before pregnancy occurred. The occurrence of symptoms as above related in primiparæ is strong evidence in favor of a toxemic origin, because we know that manifestations of this character are most apt to occur during the first pregnancy. The stones present in Cases I. and V. were so small and friable that they were doubtless the result of a recent infection.

PUERPERAL INSANITY.

To the neurologist properly belongs a consideration of the psychoses complicating pregnancy. It is only with a desire to emphasize the necessity for a proper understanding of the toxemia of pregnancy as an etiological factor that it is here referred to. Through the kindness of Drs. McKennan, Diller, and Hersman, neurologists to the psychopathic department of the St. Francis' Hospital, an unusual opportunity has been afforded the writer for the study of puerperal insanity. While the prognosis for recovery from the mental state is better in puerperal insanity than in other psychoses, the risk of death is greater than in any of the acute forms of insanity. Eight per cent. of these patients die during the attack.

Jones, in a recent report, says that out of 3,500 admissions 259 patients were received suffering from insanity, for which pregnancy, parturition, the puerperal state, or lactation were assigned as the cause—a proportion of 7.4 per cent. These are comprised as follows: fifty-six were from pregnancy, a proportion of 20.62 per cent.; 120 occurred during the puerperium, a proportion of 46.33 per cent.; 83 were associated with lactation, a proportion of 32.43 per cent., yielding a ratio among these cases of four puerperal, three of lactation, and two of pregnancy. During the year 1900 the births were given as 132,652, which yields an approximate ratio of one case of puerperal insanity admitted into an asylum for every one hundred births. Other authorities, speaking generally, state that the ratios may average from one in four hundred to one in seven hundred births.

Insanity must ever be considered as a product of two predisposing factors, stress and heredity, and it must be understood that, in order to have a case of puerperal insanity, there must be an underlying neurotic condition. The question then arises, what are the causes precipitating the attack? In searching the

literature it seems to be the opinion of most men that insanity occurring during pregnancy is due to some profound effect upon the nervous system as a result of the pregnant condition. It has been attributed in some instances to toxemia, but so far as I can learn there has been no systematic study made in a large series of cases showing a careful urinalysis, or with any particular attention to other signs of toxemia which might have existed previous to or concurrent with the attack. In cases occurring after delivery, and developing during the first seven or eight days of the puerperium, there are many factors to be considered. Shock, exhaustion, loss of blood, and the element of infection must all be taken into consideration.

As a causative factor, we must ever bear in mind that the additional stress placed upon the eliminative organs of the mother after delivery, in order to care for the morbid and effete material which is taken into the maternal circulation at this time, is of great importance. If they have been overworked previous to delivery, perhaps almost to the point of insufficiency, it is easy to understand that the additional burden imposed upon these organs, increasing the already toxic condition, may produce a profound effect upon the nervous system of women where the predisposition is present.

As a stimulant to others who may have the opportunity of making careful observations and further study along this line, a brief report *en résumé* concerning twenty-five cases of puerperal insanity is submitted. The nervous symptoms developed in all of these cases after delivery. All were under thirty years of age, eight below twenty-five. Ten, or 40 per cent. of this number, were primiparæ. In but three cases was there a history given of difficult delivery. The examination of the urine made after their admission into the hospital was incomplete, but albumin was found present in twelve, or almost 50 per cent. of these cases. It has been difficult to elicit a good history as to the condition throughout the pregnant state, but in ten of the patients referred to undoubted symptoms of toxemia, such as nausea, vomiting, headache, general malaise, and the like, had existed for some time previous to delivery. In eight cases which gave other signs of toxemia previous to delivery albumin was present. As in some instances the urinalysis was not made until some time after the beginning of the attack, it is possible that the urine may have contained albumin at an earlier date. I am indebted to Doctors

Nealon, Jahn, and Barrett, resident physicians in charge of the psychopathic department, for their kindness in securing the history of many of these patients.

Nathan Raw has observed albuminuria in 62 per cent. of patients having puerperal insanity. In some cases it quickly disappeared; in others it persisted for weeks. Sir James Simpson in 1857 recorded several cases of puerperal insanity. He says: "As far as my experience of puerperal mania goes, albuminuria precedes and attends the first attack of puerperal insanity in a large proportion of cases, but perhaps not so frequently and so constantly as it precedes and attends upon attacks of puerperal convulsions. I have found it present in eight out of ten cases of puerperal insanity at the beginning of the attack. The coagulability of the urine in puerperal insanity generally disappears more speedily than in puerperal convulsions. The fire goes on burning in these cases of insanity after the lighted match is merely applied and the strong, morbid clockwork runs on, as it were, after the key that wound it up is withdrawn. I have seen all traces of albumin disappear from the urine in fifty hours from the onset of the malady."

When Simpson was asked, "What is the special morbid agent in the blood which, when accumulated there in sufficient quantity, produces puerperal insanity?" he replied, "We know not yet, and will not know until pathological chemistry, which is still in its infancy, has grown and advanced to an extent and certainty infinitely beyond its present limited bounds."

The report of two cases taken from this series assists in emphasizing the important points.

CASE I.—Mrs. N., age 22, primipara. Patient entered the hospital under the services of T. M. T. McKennan. Her appearance would suggest a predisposition to mental disturbances. Her family physician, Dr. R. L. Ertzman, related the history as follows: During the early months of pregnancy she presented no unusual symptoms. During the last two months, however, she was not so well, and complained of headache the greater part of the time. Her pulse was very rapid and of high tension. No albumin was found at any time, but no further examination of the urine was made. The delivery was uneventful. After delivery she continued to have a rapid pulse, and on the third day the temperature rose to 102°, pulse became very rapid, and she was cyanotic. Under stimulation she improved, but during the first

week after delivery several of these attacks occurred. On the eighth day she began to show symptoms of mental disturbance, which gradually grew worse until her admission to the hospital two weeks later. At this time, six weeks after admission, she is improving mentally and physically.

CASE II.—Mrs. S., age 25, primipara. Entered the hospital May 9, 1907, coming under the service of Dr. Hersman. Her husband gave the history as follows: Considerable vomiting in the early weeks of pregnancy. Six or seven weeks before delivery she began to feel very miserable. Was short of breath, face and limbs swollen, restless at night, and suffered from severe headache. Her delivery was difficult, and she seemed much exhausted afterward. Her convalescence seemed slow, and she was very nervous and irritable. About the eighth day after the birth of the child she became delirious and has so continued until the present time, which is about five weeks after delivery. She does not recognize any one. Temperature varies from 99° to 102°, and pulse is extremely rapid. Careful examination of the pelvic organs reveals no cause for the above symptoms. The urine is scant, of low specific gravity, and contains albumin. Her condition grew rapidly worse, and she died seven days after admission. Her death seemed due to the effect of a profound toxemia in connection with the exhaustion incident to delirium.

In this patient toxemia unquestionably began weeks before the termination of labor, and if she had been placed upon proper treatment at that time it is probable that her life could have been saved; moreover, it is quite possible that the nervous symptoms would have been avoided. In the report of Jones the mental breakdown followed a first confinement in 33 per cent. of the cases, but he lays little if any stress upon the condition of the urine or other toxic symptoms existing before the onset of the psychoses.

When we consider that so many cases of puerperal insanity occur in primipara, it should at once attract our attention. We have learned that it is during the first gestation that the various forms of toxemia are most likely to occur. Also that in many of these cases of insanity there has been albumin in the urine, and many other signs of toxemia. For these reasons it is doubtless true that the non-eliminated poisonous materials circulating in the blood cause a disordered state in the cerebral cortex, with constant mental disturbance. The point in question is, if these signs of toxemia are recognized by the obstetrician several weeks

before delivery, could not these complications, which are among the saddest in our experience, be sometimes prevented? Is it not the duty of the physician when caring for a pregnant woman who possesses an unstable nervous organization, to keep her as near her own normal as possible, no matter how far it may deviate from the proper standard?

In thus considering the relationship of these toxemias to the various complications above referred to, we place greater responsibility upon the obstetrician. It becomes evident that his aim should be not only to prevent the development of the severe forms of toxemia, but to so guide his patient that she will be as free as possible from even the mildest type, for by so doing he will have greatly contributed to a normal puerperium and a safe recovery to health. Just as the surgeon calculates the ability of his patient to withstand operative measures, realizing the necessity to operate only when his patient has been properly prepared, if possible, and is at the point of strongest resistance, so must the obstetrician of the future realize that the resistance of his patient must be kept at the highest possible point in order that she may pass safely through the dangers of delivery and the puerperium.

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DIAMOND BUILDING.

DISCUSSION.

DR. E. GUSTAV ZINKE of Cincinnati, Ohio, said that no criticism could be made of the paper, and he indorsed every word of it; but, in listening to it he was vividly reminded of the many papers that had been written on this subject during the past decade, all searching for the particular cause or germ that may produce puerperal toxemia. That it was a toxemia no one denied. It was of little practical value as to what the particular poison might be; there were probably a number of them. Obstetricians should educate the laity and general practitioner in regard to this toxemia. While it was probable that obstetrics was better taught to-day than ever before in this country, yet it was a child that was neglected by the average general practitioner. The woman who became pregnant little knew the dangers that might beset her path during the following nine months. Few consulted a physician in time, and very often, he was sorry to say, when he was consulted in time he did not give the case the necessary attention. He was satisfied from what he knew about puerperal toxemia that probably nine-tenths of it could be forever eliminated if the physician knew all about it, and if the patient consulted a physician who would do as he should by her. There was so much to be done for these cases. The woman should have the necessary care from the beginning of her pregnancy until the end of it, until she was up and about after her confinement. This was what obstetricians should teach young practitioners; this was what they should preach to the public.

DR. JOSEPH PRICE of Philadelphia was greatly interested in this subject. One could not help but observe the race suicide that was going on along these lines—the inclination of the unpregnant woman. It was known how often women lost their first child by all sorts of neglect and carelessness, while the second was saved.

He recalled small epidemics of emptying the uterus in certain communities, where it was unnecessary in the second child. Now, with frequent visits of the physician, the use of the laboratory, with careful management, out-of-door life, and advanced steps in therapeutics, practitioners could save both mother and child. He spoke of this from a race suicide standpoint. Those conditions had been the means of distressing people who were ready to claim an heir early in life. He recalled a woman of great wealth who had diabetes, and the question arose as to whether it was safe for that woman to conceive, and Dr. Price was called to determine that question. He decided that it was safe for her to bear a child. The woman was watched with great care by a splendid clinician, who managed her skillfully, and who at the time of labor made high application of the forceps in a powerful, well built woman, and delivered her of a child that was now alive and the joy of a large and influential family. He had had a number of experiences of that nature which clearly demonstrated that these troubles could be managed early and safely.

DR. O. H. ELBRECHT of St. Louis asked Dr. Huggins what distinction he made between puerperal toxemia and the toxemia that causes hyperemesis gravidarum. Recently, in an article which appeared in the *Annals of Gynecology*, the two conditions were put in the same class with eclampsia.

He was glad the author directed attention to the liver, because he thought that was the place to look for the cause. All present had had the experience of having eclampsia with normal urine until at the time of delivery, and were convinced that the urine was not the place to look for the trouble in eclampsia. The urine in cases of hyperemesis gravidarum gave the same picture; but hyperemesis gravidarum, if this was what the essayist was aiming at, was one of the troublesome things the obstetrician had to handle if the case was genuine. But there was a marked distinction between hyperemesis gravidarum and the persistent vomiting of pregnancy, the same as there was between sapremia and sepsis.

It was his misfortune to have a case of hyperemesis gravidarum occur in a member of a very devout family, a woman weighing 180 pounds, and during a period of six weeks she had lost forty pounds. She was kept in a dark room, as the light brought on vomiting. She vomited day and night. He could not show her water; he had to keep her on rectal irrigation to furnish the necessary amount of fluids. They had to fight a priest in this case, who did not want fetal life destroyed. The patient was two months pregnant. He tried everything almost. One of the theories given as the cause of acute hyperemesis gravidarum was the reflex action of the nerves about the cervix. The cervix was dilated; she was given every possible medication; to check the vomiting she was given large doses of morphine, but nothing was successful. The only thing he could do was to induce abortion to cure the condition. The patient was willing and more than anxious that it should be done, but the members of the family

and priest were not. Finally, they consented to emptying the uterus. This was done, shortly after which vomiting ceased. He had seen two or three other cases of hyperemesis gravidarum, but they were not quite as bad.

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, in the severe cases that had resisted other methods of treatment, had obtained good results by the use of stomach lavage, twice daily, with rest in bed and with enemas of saline solution.

DR. HUGGINS, in closing the discussion, said he had made a distinction between persistent vomiting and hyperemesis gravidarum. He did not, however, enter into a consideration of the various conditions of toxemia and the different toxins, whatever they might be. The point he wanted to make was that these troubles, from a clinical standpoint, were evidently interrelated, and if these women came under the care of obstetricians early enough, they would not have eclampsia, nor acute yellow atrophy. These conditions came on acutely.

PRESENT TREATMENT OF PUERPERAL SAPREMIA AND PUERPERAL SEPSIS.¹

BY

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THE treatment of puerperal sapremia may be said to have been pretty definitely settled. The accepted treatment is neither experimental nor is it based on theoretical deductions, our knowledge of the subject strongly indicating the removal of all decomposing material from the uterine cavity. When there is an offensive discharge from the os uteri, and other indications of retained and decaying material, a digital exploration of the interior of the uterus should be made and the offending material removed. Failing to detach it with the finger or appropriate forceps, such as a sponge holding forceps when the os is wide enough for its easy admission, a dull curet should be used, gently manipulating the same so as not to incur risk of perforating the uterine wall.

An offensive discharge, associated with bleeding, often urgently calls for the use of the sharp curet. A large-bladed instrument entails less danger to the patient, and with it one can do more thorough work. The use of the sound or small curet is danger-

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

ous, especially for those who are lacking in large experience in this line of work. At the time of curettage I irrigate the uterus freely with salt solution through the rinsing curet, having a very moderate elevation only of the irrigator, so as to avoid risk of forcing fluid into the abdominal cavity by the tubal route. Only occasionally a few douches are given afterward. Some take an extreme view, and object to the use of the curet in any form of uterine infection, claiming that it disseminates infection. In a large series of cases I have irrigated and curetted with the happiest results. Rest in bed, nutritious diet, and stimulation if needed, form an important part of the after-treatment.

TREATMENT OF PUERPERAL SEPSIS.

The treatment of this condition as yet is undetermined and unsatisfactory. There are few diseases in which the treatment is so far from ideal. Several more or less ineffective lines of treatment each have their champions. The yeasts, the nucleins, the serums, and more recently the opsonins, have been lauded more or less extravagantly. In one or several of these lines evidently lies the hope of the future.

The non-surgical treatment is largely expectant, symptomatic, and supportive, a prime essential being intelligent and careful nursing. The application of some of the principles of physiologic therapeutics is of value here. Especial attention should be paid to the securing of the best possible condition of the assimilative, as well as eliminative organs. As much appropriate nutriment as can be assimilated should be ingested. The skin must be bathed frequently, the body warmth must be kept up in such a manner as not to interfere with an abundant supply of fresh air, while plenty of pure water by the mouth, and saline solution by the bowel or under the skin, helps in the elimination of poison. The serious and widespread streptococcus infection profoundly intoxicates and depresses the patient. The entire body economy is upset, and the physician must do his best to marshal the demoralized and scattered vital forces against the multitudinous ranks of the enemy. Gastric lavage and the cautious administration of cracked ice and champagne will do more to relieve vomiting than drugs. The use of medicines pure and simple is of little avail; indeed, many remedies tend more to debilitate and upset the patient than otherwise. The use of heart tonics, as *nux vomica* and *digitalis*, is important. Use must be made of all agents calculated to antagonize the general adynamia.

Injections of saline solution subcutaneously and by the rectum are of great value, especially in the beginning of the disease. From 200 c.c. to 500 c.c. should be used at a time. The circulation is thereby regulated, heart action increased, and the cerebrospinal system and nutritive function are stimulated. Diuresis is increased promptly, but no very increased amount of toxic matter is eliminated. Improvement is usually ascribed to the dilution of toxins in the blood. The process of dilution should be kept up as long as new toxins develop.

Frequent sponge baths will keep the skin in good condition. Abnormally high temperatures should be reduced by cold sponging with water or alcohol and the application of ice bags to the scalp. If much inflammation of the lower abdomen is evidenced an ice bag may be applied above the pubes. The inhalation of oxygen will promote the oxidation processes, and the administration of stimulants will be of value at times; ergot has been recommended on the ground that it would, by causing contraction, prevent extensive infiltration of the uterine tissues by cocci. It is, probably, of theoretical value only. The value of the nucleins, like that of alcohol, as a medicine has neither been established nor disproven, Credé's ointment, much used by its enthusiastic promulgator and his followers, and mercurial ointment, extensively used in German clinics, are both probably fairly good placebos. Fochier's abscess by fixation, produced by the injection of turpentine, is mentioned as a method of respectful antiquity. The intravenous injection of formalin solution had a brief but meteoric career. Aided by the medical press, too prone to seize every untried novelty, its boom was sudden; it went up like a skyrocket and came down like a stick.

Antistreptococcic serum has held the faith and support of the profession, made hopeful, nay even confident, by the brilliant results of diphtheria antitoxin; it was hard, therefore, to realize that other specific serums should not burgeon and blossom at the bidding of the laboratory wizard. The use of the various serums, Marmorek's being among the most notable, has not been encouraging. Lately horse serum has been used as an adjuvant to surgical measures with what seemed to be some indications of success. To date the injection of serum has obtained neither curative nor immunizing effect. It is a pretty universal belief, however, that it is only a matter of time when an effective serum will be produced which can be depended on for passive immunization and

treatment. While the results reported from the use of the serum have been on the whole encouraging, their proper use is attended with no risk. Much was expected from vaccine therapy. Sir A. E. Wright says the results in streptococcus sepsis treated by his methods with opsonins have been fair, but not very encouraging.

The irrigation of the uterus with solutions of iodine and other germicides has been disappointing. Some still adhere to these irrigations. They probably do no harm, and may cleanse the uterine cavity mechanically. Other such semi-surgical measures as the packing of the uterus with ichthyol gauze still have a few half-hearted adherents who practise the method, giving as a reason that if it does no good it does no harm. The use of the uterine curet in the treatment of puerperal sepsis has been praised by a few and decried by many. It is most likely an effective means of scattering and increasing the infection.

Pryor's method of thoroughly curetting and irrigating the uterus, packing it with iodoform gauze, opening the cul-de-sac, and making through this a fan-shaped packing of iodoform gauze, in his hands seemed to give unexcelled results. In considering this we are reminded of the old truism that human cell life is quite as susceptible to the poisonous action of chemicals as germ life, and in many instances more so. Duhrssen's suggested treatment of atmocausis for the interior of the uterus would probably have given few if any advantages over curettage, or even the use of caustic substances.

The opening and drainage of localized collections of pus is of course done by advocates of any and all methods of surgical treatment. It gives relief of a certain kind. The toxic part of the pus is no longer absorbed under high pressure. True, one is often not at all sure but that there may be concealed collections of pus after opening everything in the way of an abscess that can be located through the vagina. Recovery at best, after opening, draining, and irrigating an abscess cavity is a tardy procedure, associated with much tedious treatment. Generally a radical extirpation will have to be done later in order to effect a real cure. The simple incision and drainage of a pelvic abscess will at times save life. It is believed by many that vaginal drainage for acute pelvic peritonitis is beneficial. Others consider that all acute exudates in the same region should be incised and drained. All local collections of pus should be drained as soon as they can be located.

Simple single incision with drainage, and without irrigation, I think best for puerperal peritonitis. Some highly advocate multiple incisions, but their mortality statistics are not better than those of men who do less cutting. If the pelvis was the storm center I would advocate a supplementary vaginal drain, which has the advantage of gravity, especially when associated with the exaggerated Fowler posture. Pettit of Paris is a warm advocate of the use of horse serum in these cases; he pours it into the abdominal cavity, saturates drains with it, and introduces the dried serum on a tampon into the uterus. He says it calls out the polynuclear and increases the resistance to infection.

The excision of veins containing septic thrombi, if done early, will be productive of great good. These vessels can often be felt through the vagina as thick strands running out toward the pelvic wall, which can be approached either through the vagina or by median laparotomy. These thrombosed vessels usually lie entirely outside the uterus.

Extirpation of the uterus is of value if it is known that the infection is limited to that organ. The mild case often recovers without hysterectomy, while the infection of the severe case is very apt to be spread beyond the uterus. Removal of the infected uterus is often followed by rapid collapse and death. If the precise conditions could be determined with absolute certainty hysterectomy would be more often in order. There is much room for the exercise of good judgment in this part of the treatment. In a considerable number of cases I have followed the more conservative plan of declining hysterectomy, and have had fair results.

DISCUSSION.

DR. ERNST JONAS of St. Louis, Mo., thought the main point in the treatment of puerperal sepsis was to be sure that the diagnosis was correct. Physicians were called in consultation to give advice how puerperal sepsis should be treated, but were very much astonished to learn that no thorough means had been employed to make an accurate diagnosis. If one was sure that the uterine cavity was empty, then in most cases *noli me tangere* was the best advice to offer. But besides the absolute assurance that nothing was left in the uterine cavity, one should be likewise sure that there were no small abscesses in the parametrium, which were so frequently the cause of septic conditions, and were so easily overlooked by those who were working in this field. He mentioned one case in which a small abscess, not larger than a walnut, developed on the right side of the uterus in the broad ligament extraperi-

toneally. On vaginal examination an infiltration on this side could be made out. The condition of the patient was bad. He decided on operation after antistreptococcus serum and other remedies had been tried. He made an incision above Poupart's ligament, and gradually worked his way into the pelvis without opening the peritoneal cavity, and emptied these abscesses, shortly after which the condition of the patient improved rapidly. Unfortunately, a week afterward the patient contracted a septic pleurisy on the right side, but after frequent puncturing she recovered completely.

DR. JOHN A. LYONS of Chicago said that prophylaxis was the important object to be kept in view in these cases. When these cases were far advanced he had never had good results in taking care of them. He treated the symptoms if he was satisfied the uterus was fairly clean, giving douches, sponging, and trusting to God to bring the case out.

DR. O. H. ELBRECHT of St. Louis, Mo., complimented the essayist on the manner in which he touched on every method of treatment, but said he was very careful not to advocate any one method of treatment. He did not know exactly where the essayist stood, nor what particular method of treatment he favored in these cases.

He referred to the differential diagnosis between local sapremia and general sepsis. Unfortunately, too many cases found their way into print which were reported as instances of puerperal sepsis, when, in reality, they were nothing more than examples of local sapremia, which would recover whether treated or not. A sharp distinction should be drawn between the two conditions, and the only way to do this was by making blood cultures. But how many men made such a blood culture to determine whether a given case was one of streptococcic septicemia or not? The speaker recalled seeing a case of streptococcus infection in the practice of a nose and throat specialist. This specialist had taken out a spur from the young lady's nose in Memphis, and subsequently she died of a streptococcus septicemia as the result of infection traveling in by that route. It was foolish to introduce any chemical into the blood to combat sepsis. This had been proven by Ehrlich many years ago, who pointed out that any chemical that was introduced directly into the blood current with a view to killing any germ would also have a hemolytic effect on the red and white blood corpuscles, thus incidentally helping the infection rather than getting rid of it.

DR. ROLAND E. SKEEL of Cleveland, Ohio, said he was a little surprised that the essayist was not more positive in dealing with all the methods of treatment. He was glad that a sharp distinction had been drawn between sapremia and septicemia. During a consultation practice extending over fourteen or fifteen years, the speaker had seen quite a large number of cases of obstetric sepsis, but he made the confession that many times he was utterly and absolutely unable to differentiate between sapremia and septi-

cemia, and the clear-cut differentiation between the rise in temperature in the one or the other he had failed ever to see, so that he could utilize it for diagnostic purposes. In some cases of sapremia the temperature would go up suddenly on the third day, and on the fifth or sixth day it would decline materially. In violent cases of sepsis the temperature would rise to 106° the first day, and the patient might live for seventy-two hours. These were cases of puerperal sepsis, but in some of them one was not able to make a differential diagnosis by any positive evidence. Even to-day he was just as utterly unable to make a positive differential diagnosis between the two conditions in some instances as he was at that time. If there was a foul, offensive odor; if he could not find streptococci or staphylococci in the uterus, and could find the colon bacillus, it was purely a local colon bacillus infection.

With regard to the use of the curette, it seemed to him that sometimes curettage was resorted to in cases in which there was a local sapremia or a generalized sepsis, or what not, and it had been badly overdone, because if the general practitioner curetted as the gynecologist did, he scraped the uteri, and when he did that he disseminated the infection. There was never a time in the first seventy-two or ninety-six hours after labor when there was not more or less material in the uterus. It was always there. There was a necrotic layer of decidua cast off; there was a certain amount of clot there; one could not get rid of this by intrauterine douches, and before infection had traveled outside of the uterus, he could not see what possible harm could be done by obstetric, as distinguished from gynecologic, curettage. The granulation layer and leucocytes, which were present as preventives of the spread of infection, did not come in the first twenty-four hours. It took time for granulation tissue to form in any wound, and inside the uterus, and in some of the worst cases of puerperal sepsis no granulation tissue formed at all because the patient was dead before it could be formed. If the curette was used with discrimination, it could not do any harm.

DR. EDWARD J. ILL of Newark, N. J., did not think the members should be told what was sapremia and what was sepsis or septicaemia. They were three different conditions. A sapremic condition usually got well. Sepsis began with an inflammation in the uterine cavity; he did not care what the bacillus was that did the mischief. These cases should be treated in a surgical way. Twenty-five years ago Dr. Price told the profession how to drain. When he saw him operate, he knew why he had good results, —because he drained his cavities thoroughly. And so the uterus should be drained in these cases. He had not seen any good results from any medical treatment. A sapremic inflammation meant nothing but the retention of material in the uterus. Any tyro could make the diagnosis when he opened the uterine cavity and had a gush of fluid. That usually finished the case, but not

always, because there might be a septic inflammation. In treating such cases one should put a rubber tube in the uterus, fill the uterine cavity with gauze lightly, so as to permeate every corner of the uterus; then let the nurse or woman who is in charge of the case pour fifty or sixty c.c. of dilute alcohol into the uterus and dry up the coagula and destroy the nidus for the growth of the germs, and if the case was treated early enough the patient would get well. One should not wait until the woman was septicemic, because then the chances for her recovery were unfavorable.

DR. JAMES F. W. ROSS of Toronto said it was rather discouraging to hear discussions on puerperal septicemia from year to year, as practitioners did not seem to get any additional light on the subject. Personally, he had long since settled the question for himself, and that was, an ounce of prevention was worth a pound of cure. This applied to these cases.

In clinical work in the last few years he had been carrying out two procedures in all cases of septicemia, either after a full term labor or after a miscarriage. First, to satisfy himself that the uterus was empty, and the only instrument that was used for that purpose was the finger, and if there was retained placenta it was removed. The curette was hardly ever or never used. He did not think it should be used for this purpose, and said that a practitioner who could not remove placenta with his finger had better let it alone. In teaching a class of medical students, they should be taught that in all cases of labor and miscarriage the practitioner should satisfy himself that the uterus was empty to prevent the occurrence of blood poisoning, and if this was done he would save himself a great deal of trouble with his cases afterwards.

DR. JOSEPH PRICE agreed with what had been said with regard to curettage and also as to the importance of drainage recommended by Dr. Ill. The late Lawson Tait formulated a law that the curette should not be found in the hands of the inexperienced, and in the hands of the experienced it was never needed. Dr. McMurtry, he said, pointed out many years ago that every case of puerperal sepsis should be treated surgically. The site of the placenta was a large wound, and should be treated surgically. When he was connected with a large maternity he saw a number of cases of puerperal sepsis, and adopted the same rule in regard to maternity cases that he practised in cases of ovariectomy or hysterectomy, whether done above or below, and with precisely the same results. McLean himself, Rohé, and a coterie of others practically put an end to puerperal sepsis. There was hardly any such thing as temperature at The Preston Retreat or at the Sloane Maternity, and two other maternities. If one took the reports of these maternities, he would find that the mortality was practically *nil*, and that puerperal sepsis had practically been blotted out.

DR. MAGNUS TATE of Cincinnati said that if any practitioner entered the hall at the present time he would think that obstetrics

was coming to the front. Obstetrics in the last two years had been in the experimental stage. If he were asked as to the best treatment for puerperal sepsis, he should reply, the proper management of labor. There was the trouble, and that was the reason why these large institutions in the East, West, North, and South had such good results—the patients were being treated in a proper, scientific way. The curette, as a rule, was not used in these cases by the gynecologist or the good obstetrician, but by the general practitioner, and obstetricians were called in consultation in certain cases where the curette had been used. Whoever did gynecology or obstetrics, whenever there was an abscess, naturally would open it up. One question he had not been able to clearly understand was, in what kind of a case should the uterus be removed? He hoped Dr. Cannaday would tell him in what class of cases the uterus should be removed.

DR. CANNADAY, in closing the discussion, and in replying to Dr. Tate's question, said he did not believe any human being could say positively *when* or *when not* to remove the uterus in a case of puerperal sepsis, because, while the uterus might be removed, the patient perhaps would have done better without this operation having been performed.

He had not advocated any positive line of treatment, because, in going over the literature of the subject, he had not found any authority for a positive treatment which could be backed up with results.

END RESULTS IN OPERATIONS FOR PROLAPSUS UTERI.¹

BY

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THE very liberal discussion that followed the excellent essay upon prolapsus uteri presented by Dr. Hayd at the meeting of this association two years ago demonstrated two things—first, the importance of this subject, and second, the lack of unanimity among us as to the proper surgical method to employ for the permanent cure of this distressing condition. Some advocated hysterectomy, others ventrofixation, ventrosuspension or Alexander's operation, combined with plastic surgery of the parturient canal. I wish to offer for your consideration some of the results that have been obtained by means of the Alexander operation combined with plastic surgery upon the cervix and vagina.

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

Among the first causes of prolapsus uteri we have relaxation and lengthening of the uterine ligaments or supports, which allows retrodisplacement of the uterus. This is really the first stage of procidentia. The uterus is found pointing in the direction of the long axis of the vagina instead of, as we normally find it, at right angles to the same. Intraabdominal pressure and the weight of the uterus are important factors in the production of prolapsus uteri. This increased weight of the uterus may be due to faulty position, subinvolution, tumors, lacerations, and interference with the uterine circulation. We find hypertrophy of the supra- and intravaginal portions of the cervix producing elongation. As the uterus descends we have primary prolapse of the vagina, causing cystocele and rectocele, followed by inversion of the vagina and complete prolapse of the entire uterus, which may become rough and ulcerated from friction and exposure.

While lacerations of the vagina, levator ani muscle, and obturator fascia have some influence in the production of procidentia, this cause I believe has been very much overestimated. Why do we so often see prolapsus uteri in virgins, and why do we fail to cure prolapsus uteri in multiparæ by plastic operations upon the vagina and pelvic floor alone? What are the pathological findings in prolapsus uteri that require correction? Weight of uterus, elongation of the cervix, retrodisplacement, relaxation and lengthening of ligaments, cystocele, and rectocele.

The weight of the uterus may be lessened by a thorough curetment and amputation of the cervix; the latter doing away with the elongated cervix. The cystocele and rectocele may be repaired by the operation best suited to the operator. I believe that there are a number of methods for successfully repairing a lacerated perineum with rectocele. We may use silk, catgut, or silver, each man having his own particular suture and method; but it matters not if he bears in mind the anatomy of the parts; that the levator ani muscle arises on either side of the pubic ramus and passes back and around the lateral walls of the vagina, uniting with its fellow behind the rectum, its fibers being intimately interwoven with the lateral walls of the rectum.

We must remember, also, that not only are the skin and vaginal mucosa lacerated, but that the levator ani muscle and obturator fascia are torn and at times even the sphincter ani muscle, and that a successful operation requires that all divided tissues should be united. A successful plastic surgeon must have mechanical

SERIES I—PROLAPSUS: FIRST DEGREE

Case No.	Age	M. S. W.	Condition Before Operation	Symptoms	Date of Op- eration	Operation	Discharged	Position of Uterus	Subsequent History
1	54	M	Prolapsus first degree; lacerated cervix and perineum; hemorrhoids.	Amenorrhea; headache; backache.	1900— Jan. 25	Curettage; trachelorhaphy; perineorrhaphy; Alexander (Abbe) clamp & cauter.	Feb. 24, primary union.	Normal.....	Jan. 13, '03: Sound shows uterus to be in normal position. General health good.
2	24	M	Prolapsus first degree; small lac. of cervix; lacerated perineum.	Constant pain in back.	1900— May 3	Curettage; perineorrhaphy; Alexander (Abbe).	May 18, primary union.	Uterus in good position.	Feb. 24, '03: For past 6 or 8 mos. had pain in left ovary and down left leg on standing. Free from backache. Gained in flesh.
3	33	M	Prolapsus first degree; lacerated cervix; lacerated perineum.	Irregular menstruation; displaced uterus.	1901— April 16	Curettage; perineorrhaphy (E); trachelorrhaphy (E); Alexander.	May 15, primary union.	Good posit'n.	Jan. 13, '03: Child 5 mos. ago; since then some pain in abdomen. Sound shows uterus to be in good position.
4	30	M	Prolapsus first degree; endometritis; hemorrhoids.	Excessive flow; constipation; hemorrhoids.	1901— Aug. 15	Curettage; Alexander clamp and cautery.	Primary union.	Good posit'n.	Aug. 16, '07: Uterus in good position; no return of symptoms.
5	34	M	Prolapsus first degree; lacerated cervix; lacerated perineum.	Exhausting menses; bearing down pain; cold extremities; frequent micturition.	1902— Feb. 20	Curettage; trachelorhaphy (lait); Alexander.	Mar. 22, primary union.	Good posit'n.	June 17, '02: Uterus in normal position per sound. Jan. 8, '03: Feeling very well. Mar., '03: Uterus normal position. Aug. 28, '07: No return of former trouble.
6	28	M	Prolapsus first degree; lacerated cervix.	Irregular menstr. with pain; numbness; paralysis hands and feet. Condition disappeared c. flow.	1902— Oct. 2	Curettage; amp. cervix; Alexander.	Oct. 23, primary union. Left against advice.	Good posit'n.	Nov. 6, '06: Uterus in good position. Drawing pain on right side, region ovary and tube. Has had 2 children since operation; last child 17 months old.
7	27	M	Cholelithiasis; prolapsus first degree; lacerated cervix and perineum.	Biliary colic for six years; prolapsus.	1902— Oct. 22 Nov. 10	Oct. 22: Stone removed; cystic duct. Nov. 10: Curettage; amp. cervix; perineorrhaphy; Alexander.	Primary union.		

8	21	M	Prolapsus first degree; lacerated cervix and perineum.	Leucorrhea; some pain in hips and each side abdomen worse at night.	1903—Jan. 29	Cath. of ureters; curettage; trachelorrhaphy; perineorrhaphy; Alexander.	Feb. 22, primary union.	Good posit'n.
9	26	M	Prolapsus first degree; lacerated cervix and perineum; cystocele; endometritis.	For 17 mos. has had leucorrhea, backache; burning micturition.	1903—Feb. 3	Curettage; amp. cervix; ant. colporrhaphy; perineorrhaphy (E); Alexander.	Feb. 28,	Good posit'n.
10	34	M	Prolapsus first degree; lacerated cervix and perineum.	For 34 yrs. had severe backache, headache, bearing down and weight in pelvis; leucorrhea.	1903—Feb. 7	Curettage; amp. cervix; perineorrhaphy (Polk); Alexander; cath. of ureters.	Feb. 26,	Good posit'n.
11	40	M	Prolapsus first degree; lacerated cervix and perineum; cystocele.	Severe backache; headache; leucorrhea.	1903—Feb. 12	Curettage; amp. cervix; ant. colporrhaphy; perineorrhaphy; Alexander; cath. of ureters.	Mar. 15, primary union.	Good posit'n.
12	30	M	Prolapsus first degree; lacerated and hypertrophied cervix; lacerated perineum.	Thinks she had miscarriage, after which had bloody discharge 11 weeks.	1903—May 5	Curettage; amp. cervix; perineorrhaphy (E); Alexander.	June 2, primary union.	Good posit'n.
13	30	M	Prolapsus first degree; hypertrophied and ulcerated cervix; lacerated perineum.	Pain in left side; backache, headache; constipation.	1903—May 19	Curettage; amp. cervix; perineorrhaphy (E); Alexander; cath. of ureters.	June 9, primary union.	Good posit'n.

SERIES II.—PROLAPSUS SECOND DEGREE

1	51	M	Prolapsus second degree . . .	Prolapse; loss of flesh.	1896—April 9	Ant. colporrhaphy; post. colporrhaphy.	May 3,	Good posit'n.
2	26	M	Prolapsus second degree; lacerated perineum.	Pain back and vagina; irregular menstruation; incomplete control of urine.	1896—July 9	Ant. colporrhaphy; perineorrhaphy.	July 26, primary union.	Good posit'n.

Case No.	Age	M. S. W.	Condition Before Operation	Symptoms	Date of Op- eration	Operation	Discharged	Position of Uterus	Subsequent History
3	22	S	Prolapsus second degree; mass on left side.	Pain in back.	1896— Oct. 26	Ventral suspension. . . .	Nov. 23, pri- mary union.	Good posit'n.	
4	35	F	Prolapsus second degree; cer- vix 1" within vulva; lacera- tion of cervix and perineum.	Prolapse.	1897— Aug. 5	Curettage; amp. of cer- vix; perineorrhaphy (Emmett); Alex- ander (Abbe).	Aug. 29, pri- mary union.	Good posit'n.	Mar. 4, '99: Child born. Sept. 3, '01: child born. Normal delivery, no forceps. Exam. Feb. 14, '03 U.; good po- sition; slight cystocele. Ex- am. Aug. 21, '03. U. good position. Cysto. & recto.
5	48	W	Prolapsus second degree; Cys- tocele.	Bearing down pain; vesical irritation.	1898— May 17	Curettage; ant. colpor- rhaphy; Alexander (Abbe).	June 19, pri- mary union.	Good posit'n.	Nov. 20, '01: Cervix presents at vulva; oper. failure; to re- turn for vaginal hysterect'y.
6	25	M	Prolapsus second degree; lac- erated cervix and perineum; cystocele; hemorrhoids.	Prolapse; frequent mic- turition.	1902— Jan. 2	Curettage; ant. colpor- rhaphy; perineorrha- phy (Emmett); clamp and cautery; Alex d'r.	Jan. 25, pri- mary union.	Good posit'n.	
7	45	M	Prolapsus second degree; lac- erated cervix and perineum; cystocele and rectocele; hem- orrhoids.	Menstrual flow profuse; palpation heart; head- ache; weak legs; pain- ful frequent mictu- rition.	1902— Mar. 29	Curettage; trachelor- rhaphy; ant. colpor- rhaphy; perineorrha- phy (Em.); Clamp & cautery; Alexander.	April 27, pri- mary union.	Good posit'n.	
8	46	M	Prolapsus second degree; lac- erated cervix; lacerated peri- neum.	Irregular menstruat'n; falling of womb.	1902— May 10	Curettage; amp. cer- vix; perineorrhaphy (Emmett); Alexander	June 6, pri- mary union.	Good posit'n.	Jan. 8, '03: Patient is feeling very well. No return of pre- vious symptoms.
9	47	M	Prolapsus second degree; lac- erated cervix and perineum; cystocele and rectocele; ure- thral caruncle; hemorrhoids.	Weight in pelvis; fre- quent micturition; piles.	1902— Sept. 27	Curettage; amp. cer- vix; ant. colporrhaphy; perineorrhaphy; re- moval caruncle; cl'mp and cautery; Alex- ander.	Oct. 25, pri- mary union.	Good posit'n.	
10	28	M	Prolapsus second degree; lac- erated perineum; cystocele and rectocele.	Falling womb; back- ache, headache; am- menorrhea; frequent micturition.	1903— Sept. 28	Curettage; ant. colpor- rhaphy; perineorrha- phy (E); Alexander.	Oct. 25, pri- mary union.	Good posit'n.	

SERIES III—COMPLETE PROLAPSUS

11	24	M	Prolapsus second degree; lacerated cervix and perineum; rectocele.	Constant pain in back; meninges irreg l'r; bearing down pain; constipation.	1903— Oct. 6	Curettage; amp. of cervix; perineorrhaphy (E); Alexander.	Oct. 25, primary union.	Good posit'n.	
12	38	M	Prolapsus second degree; lacerated cervix and perineum; cystocele and rectocele.	Bearing down pain during menstruation; constipation.	1903— Oct. 13	Curettage; amp. of cervix; perineorrhaphy (E); Alexander.	Nov. 12, w'nd in groin supported.	Good posit'n.	
13	37	M	Prolapsus second degree; lacerated cervix and perineum; hemorrhoids.	Depression; pain in left side; heaviness in pelvis; leucorrhea.	1903— Nov. 14 Dec. 1	Nov. 14: Curettage; amp. of cervix; Alexander, Dec. 1: Clamp and cautery.	Dec. 13, primary union.	Good posit'n.	
14	32	W	Prolapsus second degree; lacerated cervix and perineum; cystocele; hemorrhoids.	Pain in back; pro-lapse.	1904— May 10	Curettage; amp. cervix; ant. colporrhaphy; perineorrhaphy (E); clamp and cautery; Alexander.	June 6, primary union.	Good posit'n.	Abdominal hysterectomy for fibroids done later at Montreal.
15	32	M	Prolapsus second degree; lacerated and ulcerated cervix; lacerated perineum; cystocele; hemorrhoids.	Falling womb; dragging pain in back.	1907— Mar. 12	Curettage; amp. of cervix; ant. colporrhaphy; perineorrhaphy (E); Allingham Ope.; Alexander.	Mar. 25, primary union.	Good posit'n.	Sept. 11, 1907: Some pain in back; no weight in pelvis; no bearing down pain. Uterus in good position, as shown by sound.

1	32	M	Prolapsus third degree; 3" outside vulva; lacerated and eroded cervix; lacerated perineum.	Prolapse; dysmenorrhea.	1896— Oct. 22	Trachelorrhaphy; ant. colporrhaphy; lat. colporrhaphy.	Nov. 23, primary union.	Good posit'n.	1900: one child; now complains of same trouble as before operation.
2	35	M	Prolapsus third degree; 3" outside vulva; lacerated and ulcerated cervix; lacerated perineum.	Prolapse; dysmenorrhea.	1897— Feb. 9	Curettage; ant. colporrhaphy; trachelorrhaphy; perineorrhaphy (E).	Feb. 27, primary union.	Good posit'n.	
3	47	M	Prolapsus third degree; lacerated cervix and perineum; cystocele and rectocele.	Four miscarriages; pro-lapse.	1897— Sept. 6	Curettage; trachelorrhaphy; perineorrhaphy (E); Alexander (Abbe).	Sept. 21, primary union.	Good posit'n.	Operation a failure. Prolapse to second degree returned. Submitted to second oper'n. (Case 4, series 2).

Case No.	Age S. W.	Con dition Before Operation	Symptoms	Date of Op- eration	Operation	Discharged	Position of Uterus	Subsequent History
4	30	M Prolapsus third degree; lacer- ated cervix and perineum; hemorrhoids.	Prolapse; pain in back; bleeding piles; leu- corrhea.	1897— Sept. 13	Curettage; trachelor- rhaphy; perineorrhaphy (E); Alexander (Abbe); Clamp and cautery.	Oct. 3, pri- mary union.	Good posit'n.	
5	42	M Prolapsus third degree; 1" outside vulva; lacerated cervix and perineum; cystocele and rectocele.	Frequent micturition; incomplete control of bowels; general indisposition.	1898— Mar. 19	Curettage; trachelor- rhaphy; perineorrhaphy; ant. colporrhaphy; Alexander (Ab- be);	April 18, pri- mary union.	Good posit'n.	
6	27	M Prolapsus third degree; lacer- ated cervix and perineum.	Bearing down pain; uterus protrudes at times; headache; vesical irritation; pain in legs; leucorrhea.	1898— Oct. 1	Curettage; trachelor- rhaphy; perineorrhaphy (E); Alexander (Kelly) modification.	Oct. 20, pri- mary union.	Good posit'n.	Feb., 1900: Boy born. Sept., 1901: Boy born. Exam'd Feb. 14, '03, uterus in normal position; cyst of perin m.
7	61	M Prolapsus third degree; lacer- ated cervix and perineum; cystocele and rectocele.	Mass in vagina comes outside, hinders walking; leucorrhea; frequent micturition.	1899— May 2	Curettage; ant. colporrhaphy; trachelor- rhaphy; perineorrhaphy (E); Alexander.	June 3, pri- mary union.	Good posit'n.	No trouble since operation. Good result.
8	26	M Prolapsus third degree; lacer- ated cervix and perineum.	Complete tear of perineum with first child; operation; torn with second child; operat'n	1900— Mar. 27	Curettage; amp. of cer- vix; ant. colporrhaphy; perineorrhaphy (E); Alexander.	April 25, pri- mary union.	Good posit'n.	Dec. 31, '02: Child born, normal labor. Jan. 3, '03: Uterus in normal position; slight tear perineum. Right vulva vaginal cyst.
9	41	M Prolapsus third degree; lacer- ated cervix and perineum; rectocele and cystocele.	Five miscarriages; pro- lapse.	1900— Aug. 23	Curettage; amp. of cer- vix; ant. colporrhaphy; perineorrhaphy (E); Alexander.	Sept. 19, pri- mary union.	Good posit'n.	Aug. 8, 1907: Patient has enjoyed good health since operation. No return of previous trouble.
10	32	M Prolapse third degree; 1" out- side vulva; lacerated cervix and perineum.	Four miscarriages; falling womb.	1901— April 2	Curettage; trachelor- rhaphy (E); ant. colporrhaphy; perineorrhaphy; Alexander.	May 13, pri- mary union.	Good posit'n.	Jan. 2, '02: Uterus in good position. March, '05: Cervix 3" from outlet vagina. Aug. 21, '07: Uterus in good position. No prolapse. Menstruation regular.

11	42	M	Prolapsus third degree; lacerated cervix and perineum; cystocele and rectocele; hemorrhoids.	Weakness in perineum; general indisposition; vesical irritability.	1901— Aug. 29	Curette; amp. of cervix; ant. colporrhaphy; perineorrhaphy; Alexander; clamp and cautery.	Sept. 30, primary union.	Good posit'n.	Jan. 11, '03: Perfectly well since operation. No urinary symptoms as before. Uterus prolapsed, cervix 1" within vulva. Vesicocele.
12	45	M	Prolapsus third degree; $\frac{1}{2}$ " from vulva; lacerated cervix and perineum; cystocele.	Backache; headache and weakness; cannot walk far or lift.	1901— Sept. 3	Curette; trachelorrhaphy; ant. colporrhaphy; perineorrhaphy (K); Alexander	Oct., primary union.	Good posit'n.	
13	34	M	Prolapsus third degree; lacerated cervix and perineum; cystocele; hemorrhoids; left inguinal hernia.	Weakness; foreign b'dy between thighs; incontinence of urine.	1901— Nov. 5	Curette; ant. colporrhaphy; perineorrhaphy (E); clamp and cautery; Alexander, with repair of hernia.	Dec. 5, primary union.	Good posit'n.	Jan. 23, '03: Marked cystocele. Cervix 1" within vulva. uterus large.
14	57	M	Prolapsus third degree; lacerated cervix and perineum; hemorrhoids.	Complete prolapse; unable to replace uterus.	1902— Jan. 14	Curette; amp. cervix; ant. colporrhaphy; perineorrhaphy (P); clamp and c't'y.	Mar. 15, primary union.	.....	Jan. 15, '03: Excellent result. Uterus in normal position. Patient never felt better.
15	62	M	Prolapsus third degree; lacerated cervix and perineum.	Complete prolapse; pain in back and sides; constipation.	1st, '02, Dec. 2 2d, '03, Feb. 7	Alexander; vaginal hysterectomy. Ant. colporrhaphy; perineorrhaphy.	Dec. 25, Mar. 14, .....	.....
16	44	W	Prolapsus third degree; hypertrophied cervix; lacerated perineum; cystocele.	9 mos. ago strained and felt something give way; back and headaches; weakness.	1903— May 26	Curette; ant. colporrhaphy; perineorrhaphy (E); Alexander.	June 10, primary union.	Good posit'n.	
17	33	M	Prolapsus third degree; lacerated cervix and perineum; cystocele and rectocele.	Womb comes down; head and back aches; flows considerably; constipation.	1903— June 6	Curette; amp. cervix; ant. colporrhaphy; perineorrhaphy (E); Alexander.	July 2, primary union.	Good posit'n.	Feb. 8, '04: Two months pregnant. Uterus in normal position.
18	32	S	Prolapsus third degree; elongated cervix.	Pain in back and sides for 15 weeks; headaches.	1906— July 2	Curette; amp. cervix; Alexander.	July 26, primary union.	Good posit'n.	Aug. 27, '07: Cervix 14" long. Sound passed in normal direction. Uterus felt above pubes.
19	38	M	Prolapsus third degree; lacerated cervix and perineum; cystocele and rectocele.	Dragging pain in back; leucorrhoea; prolapse 1".	1907— July 7	Curette; amp. cervix; ant. colporrhaphy; perineorrhaphy (B); Alexander.	July 30, primary union.	Good posit'n.	

SERIES IV—PROLAPSUS VAGINAL HYSTERECTOMY

Case No.	Age	M. S. W.	Condition Before Operation	Symptoms	Date of Operation	Operation	Discharged	Position of Uterus	Subsequent History
1	39	M	Prolapsus third degree; lacerated cervix and perineum.	Bearing down pains; headache; vomiting; irregular menses.	1897— Oct. 1	Vaginal hysterectomy.	Nov. 10.....	.....	Dec. 10, '07: Has continued to improve.
2	52	M	Prolapsus second degree at vulva; lacerated cervix and perineum; rectocele.	Abdominal pain; difficult urination; difficult walking.	1897— Dec. 30	Vaginal hysterectomy.	Jan. 25.....	.....	.....
3	45	W	Prolapsus second degree; lacerated cervix and perineum; cystocele and rectocele.	Feeling of weakness; profuse flowing.	1898— Mar. 1	Vaginal hysterectomy.	Mar. 4: Died; embolus of coronary artery.	.....	.....
4	64	W	Prolapsus third degree; lacerated perineum; rectocele.	Mass protruding from vagina; pain in side and back; flowed for 1 year.	1898— June 30	Vaginal hysterectomy.	July 3, died..	.....	.....
5	56	M	Prolapsus third degree; complete laceration of perineum; cystocele.	Bearing down pains; headache, backache; burning, micturition; mass from vagina.	1901— Mar. 9	Vaginal hysterectomy.	April 8,.....	.....	.....
6	59	S	Prolapsus.....	.....	1902— April 5	Vaginal hysterectomy.	May 1,.....	.....	.....
7	45	M	Prolapsus third degree; elongated and ulcerated cervix.	Prolapse; leucorrhea; pain across back.	1902— May 6	Vaginal hysterectomy.	May 20.....	.....	.....
8	62	M	Prolapsus third degree; lacerated cervix and perineum; cystocele	Prolapse; discomfort in urinating; pain in back and sides.	1902— Dec. 2 1903— Feb. 7	1st, vaginal hysterectomy. 2nd, ant. colporrhaphy; perineorrhaphy	Dec. 25..... Mar. 14.....	.....	.....

ingenuity and perform the operation best suited to the case in hand. He should not have in mind any definite diagram, but should be conversant with the principles of a number of methods advocated for repair of the perineum. I am still convinced that Emmett, that master of plastic surgery, has given to us the best method, if we but grasp the principles upon which his operation is based.

Now, as to the method of correcting the relaxation and lengthening of the uterine ligaments: The round ligaments or muscles, as they more properly should be called, are so situated that they can be readily found in the inguinal canals. Traction upon the round ligaments pulls the uterus not only forward but also upward, as I have many times demonstrated, the fundus being readily palpated just above the pubes. The anteverted position of the uterus, which follows a careful shortening of the round ligaments, places the uterus at a right angle to the axis of the vagina, this position being unfavorable to descent.

I am convinced that hysterectomy for prolapsus should be practised in only rare instances. It is an operation attended with a high rate of mortality. The loss of the uterus has a depressing mental influence upon many women; and at the child-bearing age should never be performed for prolapsus uteri. And why? Because we have proved by a number of instances that simple procedures like an Alexander's operation, amputation of the cervix, anterior and posterior colporrhaphy and perineorrhaphy, attended with no mortality, are sufficient not only to relieve symptoms, but to enable the patient to bear children and subsequently thereto to leave the uterus in good position with no symptoms.

It will be seen by the accompanying tables that forty-eight cases have been operated upon for prolapsus uteri of varying degree. Of these cases, forty-six were treated by the combined methods of plastic operation on the parturient canal and the Alexander operation. Two cases, 1 and 2, series 3, were treated at first by plastic work only, and of these two cases one, case 4, series 2, was subsequently operated upon by the Alexander method. We have been able to trace after operation twenty-three cases out of the total forty-eight, or over 47 per cent. Of the twenty-three cases examined we have found eighteen, or 77 per cent., with the uterus in good position and cured of their previous symptoms. Of the five cases remaining, two cases, 11 and 13, series 3, had a return of prolapsus to the second degree, but without any sub-

jective symptoms. Case 1, series 3, was treated by plastic work on the vagina and for four years remained well until she gave birth to a child, after which the prolapse returned. In this case no Alexander was done. Case 2, series 3, was also treated by plastic work, with also a resulting failure. This case returned later, case 4, series 2, the plastic work was repeated and an Alexander operation done. After this the patient bore two children and on examination, August 21, 1907, we found the uterus in good position, with a moderate cystocele and rectocele. The patient has had no return of the symptoms for which she sought operation. The other case of failure, case 5, series 2, was advised to return for hysterectomy.

Seven cases have borne children since operation, and one, case 17, series 3, was in a state of pregnancy at time of examination. Cases 6, series 3, and 4, series 2, have been confined twice. The labor in every case was normal, free from the use of forceps, and did not cause a return of prolapsus except in case 1, series 3, which did not have the benefit of an Alexander operation. As can be seen by studying the chart, the most brilliant results have been obtained in the cases of complete prolapse. Out of a total of nineteen cases of this degree of prolapse operated upon, we have been able subsequently to examine twelve, or 63 per cent., without being able to find one complete failure where the Alexander operation was made. One case, No. 2, series 3, failed with only plastic work on the cervix and vagina, but when, later, an Alexander was performed the operation was a conspicuous success. Two cases, 11 and 13, series 3, as reported above, had a return of prolapse to the second degree, but without any subjective symptoms. A more detailed description of each case may be had from the accompanying chart.

Some ten years ago I concluded to add the Alexander operation to the operations of curetment, amputation of the cervix, anterior and posterior colporrhaphy and perineorrhaphy for the cure of prolapsus uteri. I was led to adopt this method on account of the failure to cure an aggravated case of complete prolapsus uteri by the operation of curetment, trachelorrhaphy, anterior and posterior colporrhaphy, and perineorrhaphy. In this case the uterus projected beyond the vaginal outlet and was as large as a small orange, with a thickened, dry, and ulcerated surface. Two specialists in gynecology had told her that operation would be of no value, but that some relief might be afforded by tampons and mechanical appliances.

Four months after the first series of operations, the cervix, very much elongated, presented at the vaginal outlet. I was so impressed by the excellent results I had obtained with the Alexander operation, in a number of cases of retroversion of the uterus, that I decided to shorten the round ligaments, thus pulling the uterus upward and forward, besides amputating the elongated cervix and repairing the vaginal outlet. This patient has borne two children since the operation with normal labors. Examinations at different periods, the last one within a month, show that there is now a slight vesicocoele, while the uterus is in normal position. I am convinced of the practical value of the Alexander operation combined with plastic surgery upon the uterus and vagina in cases of prolapsus uteri.

259 BENEFIT STREET.

DISCUSSION.

DR. HERMAN E. HAYD of Buffalo complimented the essayist on the splendid results he had obtained by reason of the surgery employed, and, at the same time, he believed that the author did not realize he had contradicted himself in his paper, in that he did not attribute to the prolapsus the influence of a relaxed perineum, and the torn pelvic fascia in the production of the prolapse. It was because the essayist did plastic surgery he succeeded in curing these cases, and if it was by good plastic surgery he restored the perineum and the anterior vaginal wall, then the pelvic fascia and the levator ani must contribute a great deal towards the production of the prolapsus. It did not matter whether the author resorted to the Emmet, the Price, or to the operation the speaker described in a paper read by him at a previous meeting of the Association. If any of the operations that brought together in definite apposition from above downwards the various structures that were torn or relaxed and put in proper position, the perineum would be restored. He had found considerable difficulty in a number of his cases where he performed the Emmet operation, and it was for that reason he elaborated the operation which he read a paper on some years ago.

He agreed with the essayist, in the production of prolapsus, not only by intraabdominal pressure, but from a relaxed outlet. The first thing in the production of prolapse was a retroversion, and gradually with the retroversion was a descending cystocoele, and in turn a rectocoele, with finally the protrusion of the uterus itself, and sometimes half of the abdominal viscera. The important thing in restoring the pelvic fascia, and in lessening the vaginal outlet, was to throw the vaginal canal from a longitudinal into an oblique axis. Just as soon as one built up properly the posterior wall, he had an oblique vaginal wall posteriorly, which was the natural condition in the unimpregnated and undelivered woman.

He did not think the criticism of the essayist was fair when he eliminated hysterectomy. The speaker had been very well pleased with hysterectomy in cases of prolapsus uteri. He could not agree with the essayist that a hysterectomy should be performed in a child-bearing woman. But he saw no reason why the uterus should not be taken out when it was prolapsed, and particularly when there was a lacerated cervix and a suspicious ulceration about it, with probably a combination of tuboovarian mischief. There should be no mortality in any case of uncomplicated vaginal hysterectomy. He had done five vaginal hysterectomies within a comparatively short time for this condition, and the patients got up on the tenth day and left the hospital inside of three weeks. He would not encourage hysterectomy in a child-bearing woman.

With regard to curing extreme cases of procidentia, no matter how good the plastic work was on the perineum and anterior wall, one must open the peritoneum in these bad cases, because he had to pick up, if possible, the ends of the broad ligament and engage them in the anterior incision, in order to hold up the prolapse of the bladder and the descending rectum. If the uterus was out it should be brought up as a pump handle in that way by a rectopexy as well as bladder elevation at the same time. He did not believe that simply restoring a descended ballooned vagina, and doing an Alexander operation, would cure cases of extreme procidentia.

DR. HUGO O. PANTZER of Indianapolis, Indiana, said there was one class of cases that should have an additional structure attended to. It was that class in which the retrouterine ligaments, or they had better be called muscles, had been lacerated, and as a consequence there was a prolapsus, not only of the uterus, but of part of the rectum, and in many of these, where attention was given to the regular evacuation of the rectum, it would be found that the symptoms would be very much lessened, so that in addition to the procedures advocated the retrouterine muscles, when lacerated, should be attended to.

DR. ERNST JONAS of St. Louis, Mo., agreed with the essayist that in the moderate cases of procidentia a combination of anterior colporrhaphy with the Alexander-Adams operation or other method of shortening the round ligaments would be sufficient to cure the condition. In the more advanced cases, however, this combined operation would not suffice to relieve the patients of their condition. In the advanced cases some operators formerly removed the uterus, but lately the speaker had always combined a very high perineorrhaphy, which was always essential in these cases, with the removal of the uterus for this condition. But still later he had given up this operation, although he had been fairly satisfied with the results following the operation which had been devised by Wertheim, that is, after having done anterior colporrhaphy, to open the peritoneum, get out the uterus, and put it underneath the anterior vaginal wall. In this way the women were relieved of the fear of having no uterus. In the child-

bearing period this operation must be combined with ligation and resection of the tubes, but after the child-bearing period this condition was unnecessary. He thought that this operation gave the best results for total procidentia of the uterus.

DR. O. H. ELBRECHT of St. Louis, Mo., said that up to about the time Dr. Hayd described and advocated his operation he had seen a number of cases of procidentia; he would cite one that was convincing enough to show the difference between the two types of operation. A woman, twenty-three years of age, came to him with complete procidentia, with ulceration of the cervix on both sides. He did a plastic operation from below, anterior colporrhaphy, a plastic operation on the cervix, and later a ventrofixation. A year later she was confined and he repaired a laceration of the perineum. A year later she was confined without any trouble, and there was not a recurrence of the laceration. It fell to her lot to support four children, and in so doing she had to work hard. This brought on a slight recurrence of the old trouble, and she returned to him wanting to know what could be done. In the meantime he had been doing the Freund-Wertheim operation, which he regarded as one of the best operations for the relief of these conditions, but he had not had time to observe the results. He had operated on twenty-five or thirty cases by this method, and was having the patients come back at different times to see whether there was any recurrence of the old trouble or how they were feeling. He did this same operation on this woman upon whom he had operated three years before with the combined operation. She came back to him a week or so after she left the hospital, and informed him she was working harder than she thought she should. She likewise wrote him a letter a week or two ago, telling him of the large amount of work she was doing, and said that she thoroughly approved of this operation as compared with the old one.

DR. RUFUS B. HALL of Cincinnati, Ohio, thought the essayist's conclusions were correct as to the manner in which these cases should be treated, excepting those with extreme degrees of procidentia. He disagreed, however, in one particular with the essayist. The extreme cases seen three or four, or ten years after the menopause, where the uterus was outside of the body and had been for years, would go on until there was marked ulceration of the cervix. He believed the best results could be obtained in these by dividing the operation into two stages. Of course, many operators would object to this, because it meant unnecessary time for the patient, but no loss of time in these conditions was to be regarded if it brought end results. He believed, therefore, we could get the very best results by first doing a complete extirpation of the uterus through the vagina. These patients were usually heavy, fat women, weighing anywhere from 150 to 200 pounds. They were usually old women, and opening the abdomen was not so easy as doing a vaginal hysterectomy. In cases in which there was considerable relaxation there was no difficulty in

getting the uterus out, and there should be very little or no mortality from the operation. Sometimes one might get a death from the anesthetic, but rarely.

DR. KEEFE, in closing the discussion, said with reference to plastic operations that he believed in them or he would not have done them on this series of cases; but he thought too much stress was laid on them, and there were two instances in his early work of failures from plastic operations, but after adding the Alexander operation to the plastic he had success. This convinced him that there was something to the Alexander operation.

With reference to the sacrouterine ligaments, if it was possible to shorten these ligaments readily, it would be the thing to do, but without doing a laparotomy he thought it was difficult to shorten the sacrouterine ligaments. And, with reference to hysterectomy, he had done vaginal hysterectomy for prolapsus, but thought it should only be done in rare instances. There were cases so extreme that vaginal hysterectomy was the proper operation to do, and he thought that shortening the round ligaments was an excellent method in vaginal hysterectomy in these cases.

PHLEBITIS FOLLOWING ABDOMINAL OPERATIONS.¹

BY

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THE occurrence of so distressing and unlooked for a complication as thrombophlebitis toward the last days of an otherwise gratifying and cheerful convalescence following a serious surgical operation is to the surgeon not unlike encountering the skeleton at a feast, and his feeling of chagrin is not devoid of a certain element of humiliation. It is one thing that he has scarcely considered in making the prognosis, and to the patient it is as a bolt from the clear sky. The suffering which accompanies it, and the entailed disappointment of being consigned to the bed for six weeks longer, seldom fails to arouse a feeling of rebelliousness on the part of the patient, and one akin to exasperation on the surgeon's part.

The estimate of Cordier as to the frequency of this very unpleasant complication is no doubt near the truth, as many surgeons of whom I made inquiry gave calculations which strike about the same average—that is, that in abdominal operations the occurrence of post-operative phlebitis is noted in about 2 per cent. I

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

believe this to be expressive of a fairly conservative judgment, as no doubt many cases of a mild type are entirely overlooked, and then there is a class of cases which may properly be considered as of the same pathology, but which are not so readily demonstrated. I refer to those cases which, at the end of ten days or two weeks, begin to suffer more or less severely with intrapelvic pain, and about which no information is yielded to the examining touch, and which is generally termed "irritable stump," or a little later "adhesions," and the like, the individual being urged to be patient and to wait awhile, in the meantime tolerating massage and hot vaginal douches. After some weeks the symptoms disappear, and, while some uncertainty as to the pathology remains, it seems plausible to regard them as of phlebitic origin.

If such an untoward occurrence is to be met with in anything like the 2 per cent. which is pretty generally admitted, the subject certainly merits the serious consideration which it has of late been receiving. If the etiological factors once come clearly within our grasp, something practical in the way of prophylaxis may eventually be formulated, in which direction already much has been done that is encouraging. It is but a few years since any sort of inflammation or elevation of temperature following a surgical operation was fully accounted for in the mind of the conscientious surgeon by the one word "infection;" but to-day we know the matter is not so simple, and in many instances it is difficult to ascribe any influence in the production of phlebitis to infection; at least the bacterial invasion is in most cases only operative in conjunction with peculiarly inviting conditions of the blood.

The many conditions which are known to cause phlebitis independently of surgery have a direct bearing in this consideration when, as frequently happens, operations are performed on individuals who are the subjects of such disorders; for instance, phlebitis of syphilitic or rheumatic origin may develop during the convalescence from an operation with which there is no etiological connection whatever. Many cases of appendicitis which have been neglected develop phlebitis, and notably pyephlebitis with liver abscesses, are finally operated on, and the dire results are charged against the surgeon.

An individual may be the victim of a septic thrombosis, the result of procrastination, ready to become detached on the slightest disturbance of the affected parts, and carried into the portal circulation. The much needed operation is performed, the septic

charge is fired into the liver with disastrous results, and the luckless surgeon is again charged with little less than crime. We will all agree with Gerster that in such cases a thorough post-mortem examination is due the operator.

Phlebitis is sometimes the result, and in other instances the cause of thrombosis—the original clot depending upon either a change in the blood itself, or upon some damage inflicted upon the vein wall, whether from inflammation or traumatism. Going back to Hunter, we are reminded that “the fluid state of the blood is connected with the living vessels, which is the natural situation, and with motion,” and that when not circulating it is not subject to the same laws that govern the circulating blood. Slowing of the blood current, however, is not in itself sufficient to cause thrombosis, as Baumgarten has shown that healthy blood will fail to coagulate after many weeks, though shut off from circulation when confined between two carefully applied ligatures. We must evidently have some further departure from the normal conditions than mere slowing of the current in order to produce thrombosis.

An increased tendency to coagulation is noted in many debilitating diseases, such as tuberculosis, and following typhoid fever. There are also other circumstances not thoroughly understood that are the cause of blood changes which greatly increase the tendency to coagulation. Traumatism, damage of any sort, may be the determining factor in producing thrombosis; incisions, contusions, burns, suppuration of adjacent structures which thereby interfere with the integrity of the vein wall are all to be regarded as etiological factors.

Phlebitis, the result of infection, may undoubtedly exist without the formation of a thrombus, and conversely a sterile clot may be formed in a vein and give rise to no inflammation whatever. But, if changes have occurred in the blood favorable to the production of thrombosis, the inflamed vein wall will prove to be the determining cause of coagulation. And again, if a thrombus from any source, whether traumatism or disease, be in any degree infectious, a true phlebitis is sure to follow. Normal blood may tolerate a given amount of bacterial invasion without a resulting thrombus. It remains to be determined just what changes are involved which result in that state of the blood which is so prone to develop thrombosis when acted upon by the necessary trauma or the infection.

Wright of London has demonstrated that in the acute stage of

typhoid fever the coagulability of the blood is decreased—twenty minutes being required to produce the clot—while during convalescence the coagulability is greatly increased, the clot forming in $4\frac{1}{2}$ minutes. He also states that the blood of convalescent typhoid patients contains twice the normal amount of lime salts, and he points out that this is to be noted as the condition of the blood after a prolonged restricted diet, chiefly of cow's milk, which is more potent to produce this condition than is lime water. The suggestion is made (based upon several experiments) that the administration of citric acid as a decalcifying agent would, with some degree of certainty, reduce the coagulability of the blood in such cases. Thirty-six grains three times a day brought the lime salts below the normal and proportionately reduced the coagulability of the blood. If the fibrin ferment be shown to possess its dangerous efficiency only in the presence of an overcharge of lime salts, a step in advance will have been made.

Why the trouble occurs in the vast majority of cases on the left side is a question which is still not satisfactorily answered. In the case of the ovaries we account for the preponderance of left-sided disease on account of the proximity of the rectum. And some attribute as a cause of the frequency of left-sided affections in general the supposed lesser resistance of that side to the inroads of disease, believing that the greater resistance of the right side is a shield of safety. This theory, however, falls to the ground at least in arterial thrombosis, which occurs under a variety of circumstances, and with no predilection whatever for either side, the cases being of about equal occurrence in the two sides. The most plausible reason for the occurrence of the trouble so generally on the left side is to be found in the anatomical relationship of the pelvic vessels, the left common iliac vein passing beneath the right iliac artery, and apparently receiving pressure from this source. The prolonged recumbent posture, with slowing of the blood current, no doubt has much to do with the production of thrombosis, and there is considerable room to believe that much may be gained by allowing the patients to get out of bed earlier than has heretofore been the general custom. Dr. W. J. Mayo tells me that formerly phlebitis followed his abdominal operations in about 2 per cent. of the cases, but that since getting patients up and about by the end of the first week they have observed a reduction in the percentage to about one-fourth of 1 per cent.

In conclusion, it seems to me that we are justified in accepting as facts:

First.—Many of these cases are simply extensive aseptic blood clots, without any true inflammation.

Second.—An abnormal plasticity of the blood must be present in order that thrombosis may be the result of surgical traumatism.

Third.—The clot generally receives a mild form of infection introduced into the wound at the time of the operation, and in turn an invasion of the vein wall results.

Fourth.—As stagnation is such an important element in the etiology, getting our patients up earlier will undoubtedly reduce the liability to thrombosis.

Fifth.—As an abnormally high degree of plasticity of the blood is essential in developing the disorder, the blood ought to be tested by some recognized standard in every case, and, if found in a dangerous state, operation should be postponed until medication shall have brought it back to a normal condition.

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DISCUSSION.

DR. HERMAN E. HAYD of Buffalo, in opening the discussion, said there must be great susceptibility on the part of some women or men to phlebitis following operation, or it would not be so common after the most trivial undertaking. One of his patients, a woman, was in bed now with a postoperative phlebitis, he having operated on her four weeks ago for a simple recurrent attack of appendicitis. The wound healed kindly, without any evidence of irritation or pus. The woman was also married and sterile, but was anxious to have a child. He examined the ovaries and tubes and found they were healthy. He dilated the cervix and put in an intrauterine stem. The vaginal work was done with just as much care as the work from above. The stem was thoroughly boiled. There was no possibility of infection having occurred in this case—at least, it was not evident to him. He did a curettage before he performed the appendix operation, so that his hands were perfectly sterile for both operations. He used gloves for the vaginal work, and the same pair of gloves for the abdominal. The woman left the hospital in two weeks, walked upstairs to her apartment, and the next day complained of pain in the calf of the leg. He was immediately suspicious of phlebitis. A couple of days later the left thigh was two and a half inches larger than the right. He thought the phlebitis came from the vaginal work and not from the appendiceal operation. It was possible, however, that it might have come from the other. He cited the case to show that after such a trivial undertaking as a curettage and the introduction of a stem, under the most careful precautions, phlebitis had resulted, and probably this woman would have to remain in bed five or six, or eight weeks.

DR. JOSEPH PRICE of Philadelphia said that whenever much "acrobatic surgery" was done, postoperative phlebitis would occur. He had noticed that in certain institutions, where a great deal of prominence was given to binders, crutches, and the use of retractors, there was a large number of cases of postoperative phlebitis. He mentioned one institution where retractors and other instruments were used freely, in which there were 48 cases of phlebitis, 25 of ileus, and 18 of ether pneumonia. He had not had a case of phlebitis for five or ten years. Really, he hardly knew what it was, and it pained him to hear men talking about the early rising or getting up of patients, which was so commonly practiced. He regarded this early getting up as a variety of criminal assault on patients. Phlebitis was common in some hospitals, but very rare in others.

DR. ROBERT T. MORRIS of New York said that he had had two instances of left-sided phlebitis after operation on the appendix. It was difficult to explain the occurrence of left-sided phlebitis in these two cases.

DR. JAMES F. BALDWIN of Columbus asked if the members had not seen phlebitis occur in cases in which no operation had been made for appendicitis.

DR. MORRIS replied that he had seen it in cases without infection. In the two cases mentioned there was no infection apparently. They were interval cases.

DR. BALDWIN said that some years ago he was called to see a case of appendicitis in consultation in a young boy. In this case the phlebitis was on the left side and ran its usual course. The trouble about the appendix had subsided.

DR. JOHN W. KEEFE of Providence, R. I., said that very little was known as to the cause of phlebitis following operations. He cited an instance of hernia in a woman for whom he did a Bassini operation. The operation was clean; it was done in fifteen minutes, but a left-sided phlebitis occurred, and within two weeks a right-sided phlebitis followed. At no time was there any suppuration or redness about the hernial wound.

DR. EDWARD J. ILL of Newark, N. J., said he wished to make a confession. For a number of years he had had no cases of postoperative phlebitis, and then there were eight that came in succession in one winter. These cases were operated on in different hospitals and in private practice. Not one of his assistants had had a single case of phlebitis following operation. He took it upon himself to investigate the cause of it. He thought he operated cleanly and more quickly than any of his assistants, and still there was postoperative phlebitis. He believed it was a septic condition, for he had seen it follow five weeks after a simple appendectomy. What the nature of it was he hoped to learn some time, but at present he did not know. It might be that it was the peculiar condition of the blood which had been referred to by the essayist which was going to help us out. However, he thought that surgeons had better look to themselves.

DR. HUGO O. PANTZER of Indianapolis, commended the paper for its clear and convincing arguments. He took exception to the early rising of patients after an infectious disease. Most cases of phlebitis were certainly aggravated as soon as patients got up, as in some the phlebitis did not develop until they began to sit up.

DR. PFAFF, in closing the discussion, said he was a little surprised to hear that Dr. Price had not had a case of phlebitis in ten years. This made it incumbent upon the rest of surgeons to obtain approximately the same result, or it would be their own fault. He thought certain factors in the etiology were going to be cleared up, as Wright was too good a man for practitioners to consider lightly any statements he might make. Traumatism was inevitable in all cases. Sepsis was also inevitable, and yet it was not always the septic cases that gave us phlebitis. It was the simple, easy cases, as for instance where a surgeon had done a fifteen-minute abdominal section, had inflicted no traumatism, and yet phlebitis followed.

FORMATION OF AN ARTIFICIAL VAGINA BY INTES- TINAL TRANSPLANTATION.¹

BY

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(With two illustrations.)

IN the *Annals of Surgery*, September, 1904, I described a method which I had devised for the formation of an artificial vagina in cases of congenital or acquired absence of that organ. The case which then I had on hand was that of a young married woman who, as the result of sloughing in connection with her first confinement, had suffered complete destruction of the entire vaginal canal. She refused to have the operation which I suggested performed and passed from observation; but as the method which I had worked out was new, and seemed to me entirely feasible, I published it as mentioned.

Many surgeons have tried to construct a new vagina under conditions such as I have suggested, but all of them have attempted to make it by lining the canal which they had made between the bladder and rectum with flaps of skin taken from the inside of the thighs, or from the neighborhood of the vulva. In

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

all the cases which have been reported there has been practically complete failure, owing to the contraction of the artificial canal. I need not go into a discussion of these methods, which are familiar to all.

The method which I suggested was designed to utilize for the lining of the new vagina the sigmoid flexure of the colon, or a loop from the lower end of the ileum. The abdomen was to be opened and the sigmoid, or loop of ileum, seized near its center by forceps introduced from below through the new canal and drawn down to the perineum. The piece of bowel thus drawn down was next to be detached, with the usual precautions, by a transverse incision through the gut, but without injuring the vessels in the mesentery, the continuity of the bowel being at once restored by anastomosis. One end of the detached loop would then be inverted and closed by a continuous suture, not penetrating the mucous membrane. By pulling up the fundus of the uterus until the cervix was exposed in Douglas's cul-de-sac (or, if the cervix were absent, the opening into the uterus found), the other end of the bowel would be attached around the cervix by interrupted sutures, so as to form a canal for the uterine discharges. The abdomen would then be closed in the usual way, with, if desirable, a drainage wick introduced from above downward through the new canal and just below the loop of intestine. Finally, the patient being placed in the lithotomy position, the loop of bowel still held by forceps would be opened, the bowel cleansed as necessary, each limb of the loop packed with iodoform gauze, and the edges of the opening in the bowel attached to the surrounding skin.

At the completion of the operation a double vagina would be formed, each canal being approximately of the size of the bowel selected, and with the nutrition positively provided for by the integrity of the mesentery. The gauze would be removed and replaced from time to time as necessary, and at the end of ten days or two weeks the septum between the vaginas could be easily removed by clamp pressure. Such a vagina would be of ample size, would be lined with normal mucous membrane, would not materially contract, and would serve every purpose save that of childbirth, and it would hardly be prudent, perhaps, to absolutely deny the possibility of a birth through such a canal, considering the ample capacity of the colon under certain circumstances.

With this proposed operation in mind, I took pains in a large

number of abdominal sections, to note the available amount of slack which could be found in the mesocolon of the sigmoid and the mesentery of the ileum. I always found that the slack was ample for the purpose suggested, and in one instance I was able to carry out this procedure on the body of an adult male a few moments after his death, and while the parts were still in practically a living condition. In this instance I found in both the colon and the ileum amply slack to be used for the purpose named.

I carried out this procedure March 22, 1907, in all its details on a patient aged 38, who some eight months before had been delivered by forceps of her first child. Following the delivery there had been complete sloughing of all the vaginal tissues. All that was left was a sinus so small and so tortuous that it could not be followed by the finest probe. The patient was menstru-

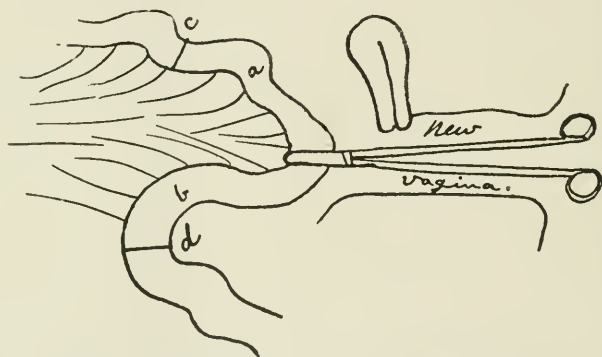


Fig. 1. *a, b*, Sigmoid; *c, d*, points for section.

ating with fair regularity, but the function was performed with great pain owing to the difficulty of extruding the blood through this tortuous canal. She was in fairly good flesh, so that any abdominal operation would be attended with more than the average technical difficulties.

The operation was made in the presence of Dr. M. Jones of Oakhill and Dr. Wardlow of Columbus. In making the new vagina the parts were separated with a good deal of difficulty owing to the amount of cicatricial tissue present, and the rectum was accidentally wounded. The wound was closed at once with fine catgut, and gave no further trouble in the progress of the case. The details of the operation were carried out, as had been previously planned. On opening the abdomen some pelvic adhesions were found, which had to be separated. The uterus was

found in a normal condition, but a double hematosalpinx was present. On the left side the ovary was somewhat enlarged and intimately connected with the corresponding tube. This ovary, therefore, and both tubes were removed. The cul-de-sac was then opened, but absolutely no portion of the vagina was present. The artificial passage which had previously been made was therefore enlarged and extended freely. A loop of small intestine (the lower end of the ileum, as this seemed to have the greater freedom of motion) was then seized with forceps, introduced through the vagina, and having been detached from the rest of the bowel was drawn down into the new canal, the continuity of the intestine being restored by means of a Murphy button. As the uterus was rather fixed in position so that it would be quite difficult to attach the cervix to the bowel in making the new vagina, and as the uterus would have no function further than the carrying on of

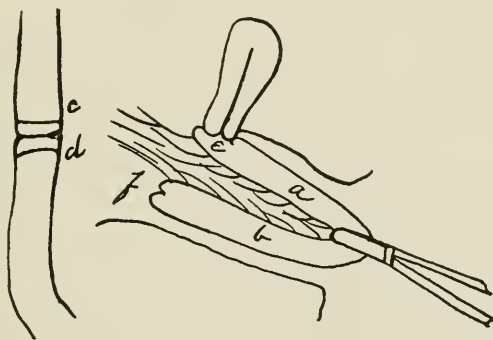


Fig. 2. *a, b*, Sigmoid drawn into new vagina; *c, d*, anastomosis; *e*, attachment of one end to cervix; *f*, closed end.

menstruation, it was removed in the usual way, leaving the right ovary. The peritoneum was drawn over the floor of the pelvis so as to leave this intact.

Healing of the abdominal incision took place by first intention, and the tissues in the perineum united with equal promptness, except at the point where a drainage wick had been passed from above down. This healed as soon as the drainage wick was removed. The entire series of operations required two hours, but in a patient with thinner abdominal walls, and with the experience gained from this case, the time could be very materially reduced.

May 1 the septum between the two vaginas was cut with

scissors, light packing introduced, and the patient returned to her home May 4 in excellent condition. The Murphy button passed on the tenth day after her operation. August 18 the patient consulted me and was feeling perfectly well. All her pelvic symptoms had subsided, and her only complaint was that occasionally her bowels were a little loose and that there was at times a little difficulty in holding her urine. This difficulty she had had before her operation, so that the operation itself was not in any way responsible for it. Her power of retention was increasing, and will doubtless ultimately be entirely recovered. Vaginal examination showed everything in fine shape. At the extreme upper end of the vagina I could make out a septum, the remains of the original septum formed by the two intestinal walls. The new vagina seemed to be absolutely normal in every way, so that I think no one in making a vaginal examination would have suspected any abnormality. The vagina was capacious in every particular, and showed no evidence of any cicatricial contraction.

With this lapse of time, therefore, since the operation, and with the excellent local conditions which are present, I believe the operation in this instance may be accepted as having been entirely successful. The operation is not one which should be undertaken by a tyro in abdominal surgery, since the operator should understand thoroughly what the different steps of the operation are, and how to carry out promptly and accurately the proper technique. The experienced surgeon, however, should have no special difficulty in carrying it out in all its details, and with no more risk than that attending any other abdominal operation of average difficulty.

DISCUSSION.

DR. JOSEPH PRICE of Philadelphia said that the method described was an ingenious one for such an affliction. However, all surgeons had had experiences along that line. For instance, surgeons were commonly asked to repair some horrible traumatic lesion, such as one received by a patient falling astride an iron fence, splitting the rectovaginal septum, and occasionally one would find a little girl, perhaps, with these parts nothing more than a cloaca. He cited such a case, which had come under his observation recently, and on which he had operated.

SOME OF THE CAUSES OF PAINFUL MENSTRUATION IN YOUNG UNMARRIED WOMEN.¹

BY

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1. It is absolutely essential to consider the anatomical conditions existing in discussing this subject.

2. The cause of painful menstruation must be thoroughly understood before we make any attempt to relieve the condition.

3. Does painful menstruation persist to a greater degree in those individuals imperfectly developed or do we find it prevailing as frequently in the athletically developed young women?

4. Do we find the condition as frequently in the individuals occupying the lower walks of life as in those with luxurious surroundings and whose early lives are spent in the nursery, schoolroom, and boudoir?

5. Does diversion and occupancy of the mind exert any influence to prevent painful menstruation?

6. What relation does nasal catarrh bear to these cases?

7. A congenital thickened condition of the endometrium bears a strong causal relation to the existence of painful menstruation.

8. Painful menstruation is too lightly considered by the family physician and the condition is not dealt with as a pathological condition.

THE subject of this paper is one of great importance to the gynecologist, for it is absolutely impossible to overcome a condition of dysmenorrhea until we recognize the cause existing in the individual cases presenting themselves for treatment. Pain during menstruation is looked upon too lightly by the family physician, who considers that the majority of unmarried women experience pain at the time of menstruation. This class of cases is seldom referred to the specialist for the removal of the cause, which in most cases is unrecognized by the general practitioner.

The patient is told that she must suffer until she enters the marital state, when, if she is fortunate enough to bear children, she will be relieved. We recall the occasion of reading a paper upon the treatment and relief of painful menstruation.¹ A member of the association, in discussing the same, said "he always suggested that the patient should marry, and this he considered the most efficient treatment which he could advise." Not every girl has met the man with whom she would be willing to mate, and frequently these young women, when married, remain sterile

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

because some pathological condition exists in some portion of the sexual organs, and finally they are compelled to submit to operative measures before they can conceive and bear children.

In the first place, we must understand the anatomical conditions which exist in healthy and normal females. We must understand the physiology of the process of menstruation. So many theories have been advanced as to what occurs at this time which have been proven false, that it is not surprising that we are so uncertain in regard to what does take place at this time. We must first study the female sexual apparatus and understand the structure of the organs concerned, the amount and distribution of the blood supply, the nerves, their origin, with a consideration of the possible reflexes that may be transmitted not only from distant portions of the human frame, but also what impulses and reflexes may be sent to distant portions of the body. These points may be either spinal, encephalonal, or abdominal.

Byron Robinson in his latest work has most clearly outlined the tract of the sympathetic nerve and elucidated how sensations and impulses can be transmitted along this tract. Starting from the brain, we have the first station along this nerve line at the Wrisberg ganglion controlling the action of the heart. The next station is at the celiac ganglion controlling the stomach, kidneys, and liver. Lastly we have the ganglion cervicovaginale, or pelvic brain.

The sick stomach frequently existing during painful menstruation, the excessive action of the kidneys and the liver disorders prevailing at this time are explained. The headaches and the pains in the lower extremities are readily understood. The physiology of menstruation is not satisfactorily explained at this time. Many theories, as before stated, have been advanced, only to be proven false by more recent investigation. Westphalia, Mandl, and Gebhard claim that "at time of menstruation there is a passage of red and white blood cells, whether by diapedesis or by rhexis is not known, through the endometrial capillaries. This blood collects in the superficial part of the endometrium beneath the surface epithelium, through which it finally passes, detaching the epithelium here and there and carrying away small portions. The amount of menstrual blood lost at a single period is said to average four to six ounces."

Compare this description with that of Dalton (edition 1867), "that the blood which escapes during menstruation is supplied

by the stroma or lining mucous membrane. It is discharged by a kind of capillary hemorrhage, similar to that which takes place from the lungs in cases of hemoptysis, only less sudden and violent. The hemorrhage comes from the whole extent of the mucous membrane of the body of the uterus." Landois (edition 1889) states "that the uterine mucous membrane in its entirety is the chief source of the blood. The glands enlarge and the cells undergo fatty degeneration and likewise the tissue and the bloodvessels lying between the glands. This fatty degeneration and the excretion of the degenerated tissue occur, however, only in the superficial layers of the mucosa, whose bloodvessels, when torn across, yield the blood. The deeper layers remain intact, and from them, after menstruation is over, the new mucous membrane is developed. The mucous membrane of the cervix remains free from these changes."

Reichert's theory is that before an ovum is discharged there is a sympathetic change in the uterine mucous membrane, whereby it becomes more vascular, more spongy, and swollen up. The mucous membrane so altered is spoken of as the *membrana decidua menstrualis*, and from its nature it is in proper condition to receive, retain, and nourish a fertilized ovum which may come in contact with it. If, however, the ovum be not fertilized and escapes from the genital passages, then the entire mucous membrane degenerates and the blood is shed as above described. According to this view, the hemorrhage from the uterine mucous membrane is a sign of the non-occurrence of pregnancy. Pfluger considers that the "constant growth of the ovarian cells and the consequent swelling of the ovary subject the ovarian nerve fibers, and through them the spinal cord, to a constant slight stimulation. Through the summation of the stimuli within the cord a reflex dilatation of the vessels in the genital organs is produced; the excessive blood supply leads in turn to a tumefaction of the uterus and frequently to the ripening of a Graafian follicle. Bleeding follows."

James Oliver (London, Eng.), in an article published in the *New York Medical Journal*, June, 1907, endeavors to show that menstruation is neither a manifestation nor yet an association of any process of denudation of the uterine mucosa, and offers as evidence what obtains in cases of chronic inversion of the uterus. "Under such circumstances, as is well known, menstruation may continue to display a periodic tendency, although the discharge

related thereto is invariably excessive in amount and usually recurs more frequently than was its wont. Moreover, during the intermenstrual period there transudes from the extroverted endometrium a greater or less amount of serous fluid, which is often tinged with blood. This discharge is essentially a filtration product, and arises from the turgescence of the uterine tissues generally. The turgor is due to an interference with the nerve and vascular states of the organ, and so pronounced may this interference become that gangrene may set in."

This writer accepts the theory of diapdesis and of a loss of the outer layer of the mucous membrane in patches. He also believes menstruation is closely connected with the nervous system, and that, too, with the sympathetic. A woman whilst menstruating falls down ten to fourteen steps. The flow is at once arrested and fails to return until the next cycle is reached. The oviducts participate in the congestion and when the bloodvessels are distended in the uterus those in the oviducts are in like condition. Thus we have oviductile motion developed. What conditions existing will cause painful menstruation? Displacements of uterus, congested condition of the endometrium where the lining of the organ has become so thickened that the natural processes occurring during menstruation cannot take place. The blood and degenerated epithelium cannot escape by diapdesis and there cannot take place the shedding of the outer mucosa; this failing to occur the blood cannot pass off. The bloodvessels remain distended and the glands continue enlarged after the normal period, for menstruation has passed by. The result is the development of fungoid growths upon the walls of the uterus.

Any cause that will bring about a thickening of the lining of the uterus will eventually produce dysmenorrhea. Contracting cold during the menstrual flow, thereby interfering with involution of the uterus and the consummation of those changes which normally occur in the tissues at this period, is a cause of dysmenorrhea. Shock and mental influences exert a strong influence in bringing about this condition. An imperfectly developed condition of some portion of the sexual organs, any abnormality in development, any vicarious function which may prevail in any of them, will be a cause for painful menstruation. A frequent cause is flexion of the uterus with a contracted condition of the uterine canal at the internal os. A diseased condition existing in the ovaries or fallopian tubes or in the broad ligaments will

produce painful menstruation. Tumors or deposits in any portion of the pelvis or lower abdominal cavity will develop dysmenorrhea.

An imperfectly developed condition of the sexual apparatus is so frequently a cause for painful menstruation that we must recognize it. Malnutrition, anemia, chlorosis, and general physical feebleness must be accepted as a cause in very many cases. These young women marry but remain childless. Menstrual neurosis is so thoroughly recognized as a cause that it is not required that we more than mention it. In these cases the slightest divergence from the ordinary manner of living or the stimulation by any excitement will bring on a premature menstruation attended by pain; the neurosis is transmitted throughout the entire sympathetic system, as evidenced by the excessive action of the kidneys or diarrhea from the intestines, palpitation of the heart, neuralgias of the chest, and cephalalgias with intolerance to light and loud noises.

Young women in attendance at colleges where athletic exercises form a requirement in the curriculum do not suffer from dysmenorrhea to the same extent as those in schools where exercise is perfunctory. Moderate athletics are helpful to young females. I do not approve of the vaulting horse, horizontal bar, nor the climbing ladder, but the dumbbell, light club, and wand exercise are beneficial to young developing women. At "The Margaret J. Bennett Home" in Baltimore, Md., for young working women (mostly stenographers and typewriters), where I have been the attendant and adviser since the opening, we have a well-equipped gymnasium for light calisthenics and insist that a certain period be allotted for exercise. The result has been most satisfactory and the number of the inmates suffering from dysmenorrhea has decreased. In this institution entertainments are provided and the habits of life regulated; besides, the hour for retiring is fixed, the diet arranged so that the greatest nourishment is secured from the food. Each inmate is provided with an individual room, well lighted and heated. Night visiting and chafing dish suppers are not allowed. The health of these young women is phenomenal, and many of the residents who came into the institution broken down and suffering from dysmenorrhea have been built up and their pains relieved. The discipline of the institution is kind, but the young women are compelled to care for their bodies and rest their nervous systems. The result of the

surroundings have been marvelous and the result of the discipline most satisfactory.

Dysmenorrhea does not prevail to the same extent in young women in the lower or middle walks of life as among those with luxurious surroundings. The young women taking their exercise in their carriages or motor cars, whose early lives are spent in the nursery playing with their dolls and toys, whose every desire is anticipated and gratified, are not leading lives to develop strong women mentally or physically. The life at the fashionable boarding school is not conducive to the development of robust bodies and perfect digestion. The wealthy young woman spends the most valuable portion of the night at entertainments, in insufficient clothing and amid scenes to excite her nerves and surroundings depressing to her physical condition. On the other hand, the working girl oftentimes spends her days at the sewing machine or in indifferently lighted and ventilated factories. Her hours are, however, fixed, and if she wills she can rest during the night. She lacks the beneficent and health-giving effects of the sunshine and very frequently her food is not properly prepared or of a nourishing character. Legislation, public opinion, and influence are doing much to overcome this condition in the Eastern States. As professional men it is our duty to take an active part in the great struggle to remove the opprobrious sweatshop and the vile surroundings of the canning-house.

Diversion and occupancy of the mind does benefit young women. Both of these must be of the proper character. A young woman who has been standing in a department store from 8 A.M. to 6 P.M. should not be expected to take a constitutional walk of a couple of miles after her duties are over. She does require diversion among congenial friends. Evening entertainments which allow her to retire at a reasonable hour are beneficial to a young woman's health. The habit of going to the bedroom immediately after a hearty evening meal and spending the time until retiring reading trashy novels does not conduce to the development of a healthy mind or body. The young woman who works during the day requires that relaxation which can be secured by diversion, otherwise a nervous condition will develop which may cause neuralgic dysmenorrhea.

What influence does nasal catarrh and diseased conditions of the turbinated bones exert in producing painful menstruation? With the exception that these individuals are, as a rule, in a

low state of vitality, strumous, and with a tendency to develop tuberculosis, we do not consider that there exists any connection between the two conditions. A congenital thickened condition of the endometrium does prevent diapdesis and discharge from the inner layers of the uterine mucosa. In this condition the secretion in the glands is retained and the capillaries are seen elevated upon the inner surface of the uterus. This gives rise to fungous growths and we have a similar condition which frequently is found in women after childbirth.

These are the cases where curetment accomplishes so much and from the tissues left behind we often have healthy endometrium developed. Curetment should be performed more frequently for the relief of painful menstruation; the result commonly is complete cure of this condition.

In conclusion, we would insist that attention be given to these suffering young women and that we perform those operations which have been so successful in giving permanent relief to this class of cases. The girl suffering from dysmenorrhea is an invalid, unable to meet her friends and engage in those entertainments and diversions in which she is expected to take part. Little sympathy she secures if she does excuse herself on account of not feeling well. And this occurs about thirteen times each year. As men, suppose some painful condition should fall to your lot every twenty-eight to thirty days and last four to five days. Would you not insist that some radical means be made use of in order to be freed from your sufferings? Now do something to bring relief to these suffering young women; dilate, curet, slit their cervixes, ream out, or do something else that will bring an end to their pain.

5 EAST BIDDLE STREET.

DISCUSSION.

DR. BERTHA VAN HOUSEN of Chicago, by invitation, thought the essayist had omitted one of the most potent causes of dysmenorrhea, namely, a diseased appendix that made itself known only at the time of the menstrual period. She thought the surgeon had the misfortune to have done every possible thing for patients suffering from dysmenorrhea, such as the Alexander operation, curettement, correction of the retroversion, dilated the uterus, etc., and yet the patients kept on suffering. She had had this experience more often than she thought she ought to have had. During the past two years she had recognized more and more the importance of making a thorough examination of the appendix, and

since she had done this she had had almost no case of dysmenorrhea that she had not been able to relieve.

DR. JOSEPH PRICE of Philadelphia said he felt that a great injustice had been done one of the past-masters in gynecology and pelvic surgery—Robert Battey of Rome, Georgia. The author of this paper should read Battey's contribution in the Transactions of the American Gynecological Society before publishing his paper. After reading Battey's paper and reviewing his early operations, the speaker found that the same class of cases at present would be dealt with surgically and more successfully than in the time of Battey, because he (Battey) operated in preaseptic days, and unfortunate conditions or complications followed his operations. In this connection Dr. Price said that menstrual disturbances had been greatly exaggerated. He could remember perfectly well that whenever any young woman in the valley of Virginia got married she became a mother. He believed that early matrimony was the best treatment for all varieties of dysmenorrhea, with the exception of those cases in which pathological conditions existed. He had just removed two small dermoid tumors from women who had married and had conceived. These dermoids complicated their menstrual history. They were so prone to inflammatory action and adhesions that they should have been removed before the women were married. Appendiceal complications had not been commonly referred to. He was satisfied that in a number of women who had been married and failed to conceive, their sterility was largely due to a previous appendicitis.

DR. J. HENRY CARSTENS said he had found that there were two different conditions. In one the dysmenorrhea did not amount to much, and would pass away in many instances if the women got married and bore children. In the other the dysmenorrhea was a serious thing, and it was necessary to differentiate clearly between the two. Where the trouble was in the uterus, he had repeatedly called attention to the value of the use of the stem pessary to remove the hypertrophied condition of the mucous membrane, and in several instances where the dysmenorrhea was due to an undeveloped uterus, by stimulating and bringing about further development of that organ, good results were obtained in cases that had resisted all other forms of treatment. In the very extreme cases of dysmenorrhea, where it was impossible to ascertain the cause, he believed the surgeon was justified in making an abdominal section for diagnostic and curative purposes, and one should do whatever he found was necessary. After the abdomen was opened the surgeon would find sufficient pathology, as a rule, to account for the woman's distress, and would have no difficulty in relieving her condition.

DR. HUGO O. PANTZER of Indianapolis was delighted with the emphasis put on the hygienic treatment of these cases. His efforts had been fruitful in the one class of cases emphasized by the essayist, exemplifying the effect of proper hygiene in the case of young girls who went to mountainous regions for a short sojourn,

changing their manner and habits of living, climbing hills, and mountains, thus relieving them of this affliction for months after, or until they returned to a life that was faulty so far as hygiene was concerned.

DR. SELLMAN, in closing the discussion, said he failed to recognize a causal relation between appendicitis and dysmenorrhea. He verified Dr. Price's remarks regarding Virginia girls marrying and bearing children. These women, if questioned, would be found not to have had dysmenorrhea before marriage.

THE MENSTRUAL FUNCTION; ITS INFLUENCE UPON CHRONIC INFLAMMATORY CONDITIONS OF THE APPENDIX.¹

BY

FRANCIS REDER, M.D.,

St. Louis, Mo.

WHY should the menstrual function provoke an attack of appendicitis? Upon what grounds can it be made reasonably clear that the menstrual function is the exciting cause? The menstrual function can only provoke an acute attack in an appendix that is chronically diseased. The menstrual function must be considered as a habitual functional hyperemia, and as such must be looked upon as the causative factor.

After a somewhat painstaking consideration of the cases coming under my observation, I can state that only in the severest forms of adnexal disease can the inflammatory condition communicate itself to the appendix and cause the primary acute attack. It is in the chronic form of appendicitis, be it a catarrhal or an interstitially diseased appendix, where a pelvic hyperemia can arouse the dormancy of a smouldering appendix and provoke the clinical manifestations of an acute attack. That such a bacterial activity may incite an attack, pathologic conditions must be favored by the anatomic relationship of the right iliac fossa and the true pelvis. For instance, an appendix, with adhesions, dipping over the pelvic brim, with its end resting somewhere in the true pelvis, would be an example where the organ might easily share with the hyperemia of the pelvic viscera. Even if no pathologic lesions, such as abscesses, existed, the anatomy of the

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

right iliac region, and in particular the structures of Clado's ligament, would give sufficient convincing evidence of how an active pelvic hyperemia could involve the appendix.

Why a smouldering appendix should show activity one, two, or three days before menstruation, and remain quiescent at other times, has been to me an especially difficult matter to reason out satisfactorily. I have, however, come to the conclusion that such an appendix can show activity, independently of the menstrual function, provided the proper conditions exist favorable to an attack. I wish to state here that any remarks are directed only to those attacks that have been observed to occur regularly with the menstrual function for periods of from 4 to 18 months. My attention was first called to this menstrual appendicitis, and I beg to ask the indulgence of the fellows of this association for calling it such, when two women came under my care, suffering with an abdominal pain at the time of menstruation. Both had been operated on for ovarian disease, the operation removing the ovaries from both women. I was informed by them that for two and five months, respectively, they felt improved after the operation, but that now the pain had returned as bad as ever.

The history is of interest, but I will state only the more salient points. Mrs. M., age 32, married, four children, two miscarriages. Housewife and in good health. Typhoid fever at age of 16; always accustomed to hard work. Last miscarriage three years ago at two months. After that her periods were quite painful and profuse, but regular. About a year after the last miscarriage the pain at the time of her menstruation was of such a severe nature that she consulted a physician. As to the character of pain, the patient states that it was constant and cutting, changing but little in its severity. She was unable to locate it at any particular place, as it was diffused over her whole abdomen. Pressure over the lower part of the abdomen caused the pain to increase in severity. The patient was unable to say whether the right or the left side was the more painful.

Her abdomen would become swollen and hard, she would often feel nauseated, and she experienced chilly sensations, followed by what she thought was fever. Her physician, however, informed her that if she had temperature it was very slight. For almost a year she was under treatment, but was benefited very little. The pain would manifest itself usually a day or two before her menses, and would continue, but less severe, for about two

days during the period. During her intermenstrual time this woman was in good health.

Inasmuch as the treatment she had been subjected to for months gave no improvement, operation was advised and accepted. Both ovaries were removed. In three months she was able to leave the hospital. When the time arrived for her menses following the operation there was no evidence of any flow; the patient, however, suffered much pelvic discomfort, and a heavy, dull pain in both iliac regions. This condition lasted almost two months, causing the patient to feel quite sick. Five months after this condition had passed off, she was awakened one night by a severe pain in her abdomen, intense on the right side. With opiates and hot applications her physician was able to give her comfort after the third day.

During the following five months she suffered this pain at a time corresponding to her menstrual function. The pain grew more severe with each attack, and the patient began to suffer physically. I saw her in the last attack. The condition offered no difficulties as to diagnosis. An immediate operation was performed, and a club-shaped appendix, its tip adherent and dipping into the true pelvis, was removed. The patient made a good recovery, and has been free from any further attacks of pain in her abdomen.

About seven months later I saw a second and similar case. Mrs. G., age 38 years, married, five children, no miscarriages, health always good excepting a mild form of malarial fever during spring and fall, but always able to do her housework. Her menstrual function was regular, but never free from pain. Suffered much discomfort from abdominal distention. The flow took unusually long in starting, and was accompanied by a sense of pelvic fulness during the time when pain was present. Hot douches, sitz baths, and salines gave much relief. About fourteen months ago this woman was taken with severe cramps in the lower part of her abdomen. These cramps were of an unusually severe nature, and required medical aid for their relief. Nothing unusual was thought of this, it being the time for her period. Furthermore, the day before she had been doing some washing, and from this the inference was made that she had caught cold. The following day, after the cramps had been very severe, the flow started and the patient felt easier, but not free from pain. The pain lasted three days after the flow had established itself.

At the next menstrual function, and for the four periods that followed she suffered very much. Ovarian disease was diagnosed, and she was informed that only an operation could promise a cure. After suffering severely with two more periods, she submitted to operation. Both ovaries and tubes were removed. The patient made a good operative recovery, but when the time arrived for her menses to appear again she suffered more than at any time before. She was bridged over her pain with opiates. She was able to be about, but did not feel well. Although free from distinct abdominal pain, she felt very uncomfortable in her right side.

I saw the patient at the time of her supposed menstrual activity, two months after the operation. She was suffering severely throughout her whole abdomen. There was distention, tenderness, and rigidity, the muscle resistance being more marked on the right side. She was unable to locate the pain. Pressure over the right iliac region was not tolerated, while over left iliac region it was permissible, but was very painful.

Vaginal examination revealed an exceedingly painful spot high up on the right side. On the left side the examination caused pain, but much less than in the right. Temperature, 99.4°; pulse, 90. Diagnosis of chronic appendicitis was made, and operation was advised. After some deliberation on the part of the patient, and after passing through another attack at her regular menstrual time, she consented to operation, which was performed two weeks after the symptoms had abated.

An abnormally long appendix, directed downward and inward toward the pelvis, was removed. It showed evidence of former inflammatory conditions by two constrictions and many firm adhesions. The patient's operative recovery was good. There was, however, a tenderness that remained in the right ileocecal region for several weeks after she was able to leave her bed. The eventual recovery, however, was satisfactory and complete.

From these two cases the inference must be made that in reality no disease of the adnexa existed, or, if so, in a very mild form, and that the pain as experienced by these patients emanated from a diseased appendix. I frankly admit that it is a difficult matter to interpret correctly any clinical picture of a woman who is suffering severe abdominal pains during her menstrual time, especially when she gives a history of painful menstruation. The symptom complex is rather confusing and uncertain. It requires close study of the case to be able to determine whether this pain

is caused by diseased adnexa or a diseased appendix, or both. In differentiating between abdominal and pelvic pain the value of a vaginal or a rectal examination must not be underestimated. I wish to state that in the cases coming under my observation, when a diagnosis of appendicitis was made, the most important disclosures were revealed through such examinations. I would hesitate to give a positive diagnosis of appendicitis in such cases unless I could get sufficiently convincing evidence by a vaginal or rectal examination.

Now, upon what grounds can it be made reasonably clear that the menstrual function is the exciting cause? So far I have had under observation nineteen patients, fourteen married and five single, with ages ranging from 20 to 40 years. Their health on an average has been good. They have been able to work, excepting for several days when the menstrual condition compelled them to lie down or take to the bed. Some of these women were anemic, others gave the appearance of perfect health, but all suffered more or less pain at their menstrual times.

In endeavoring to ascertain whether or not some of these women had passed through an acute attack of appendicitis, I found only four that were certain that they had had an attack. I was, however, able to ascertain that all had suffered from a severe attack of indigestion at some time or another, either with a looseness or a constipated condition of the bowel. It is clearly evident how difficult it is to diagnosticate chronic appendicitis when no definite history of an acute attack can be obtained, especially when painful menstrual conditions may readily cause one to overlook an appendiceal complication.

That some patients develop chronic appendicitis insidiously, that is, without a characteristic acute attack, I believe to be quite true; that is, however, a question of general health. I could not convince myself that such was the case in even one patient of the nineteen I have mentioned. I am of the opinion that every one of these women had an acute attack of appendicitis at some time, the attack not being recognized. I do not believe that a menstrual hyperemia can provoke an acute attack in a healthy appendix. I do believe, however, that a menstrual hyperemia can incite an acute attack in a diseased appendix.

Why have not these patients suffered any acute attacks at a time when the menstrual function was not in evidence? Equilibration of the metabolic forces is essential to the maintenance of

health. These women inform me that they are in good health, and only at the time of their periods do they suffer with this abdominal pain. We must infer from this that there is a sufficient force of the element of health in the body to keep in check the microbic action of a diseased appendix. I assume that upon this principle it may be explained why acute attacks have not occurred in these women during their intermenstrual periods.

It would appear, then, that something of an unusual nature would take place in the economy of these women at the time of their menstruation. We know that every woman suffers more or less with a systemic depression about that time; that is physiological. I can assign no other cause but this depression, this lowered resistance in the tissues, as a potent factor in inviting an acute attack of appendicitis about the time of menstruation. Through anatomical channels, and often through pathologic tissue changes, the appendix must share in the congested condition of the pelvic viscera. Such an influx of blood to a surrounding appendix is an incentive for bacterial activity.

It could be expected that through the lowered vital resistance of the body the opsonic power of the blood would become reduced, thereby creating a condition favorable to the pathogenic microbes that are either harbored in the stagnant secretions so often found in the lumen of a diseased appendix, or have, through the lymphatic channels, found lodgment in the walls of the organ. If we can convincingly assume that the opsonic power of the blood is diminished at the time of the menstrual function, we could satisfactorily explain how the increased blood supply would act as an exciting medium to the pathogenic bacteria. The leukocytes would be unable to cope with the virulent bacteria, having been rendered powerless to fulfill their function as phagocytes without the help of these opsonins.

Under these conditions, the activity of the pathogenic bacteria would manifest itself as long as there was no increase in the opsonic power. Fortunately the systemic depression incident to menstruation is of short duration, and this accounts for the brevity of the attack. We assume that with the subsidence of the lowered systemic resistance, the opsonic potency of the blood is restored to normal, thus enabling the leukocyte to again become invested with the power to attack and destroy its bacterial enemies.

DISCUSSION.

DR. W. A. B. SELLMAN of Baltimore could not agree with the essayist that women experienced a peculiar condition during menstruation, such as exaltation or depression, or some psychological condition. He did not believe that was so. Take the women who had enlisted in the army and navy, who dressed themselves as men; these women menstruated, but he doubted whether they experienced painful menstruation.

DR. JAMES F. BALDWIN of Columbus, Ohio, said that in several cases of dysmenorrhea operations had been performed, the tubes and ovaries removed, but pain still continued. The surgeon operated subsequently and found appendicitis. That emphasized a point he had been urging for a good many years and had constantly carried out, namely, that in young women especially the appendix ought to be examined in a case in which the abdomen was opened, and if at all pathological, as these appendices nearly all were, it should be removed. He was speaking now of young people. Had this been done in the cases cited by the essayist there would not have been appendicitis later on.

He thought that most of the dysmenorrhea found in young women was a penalty which they were paying for so-called civilization. We had headaches; we had bad teeth; we had bad digestions, and women had painful menstruation. All these ailments very largely were penalties which we paid for civilization. He did not know that civilization was pathological in itself, but certainly our ways of living were so unnatural, using that word in the proper sense, that necessarily we must pay many of these penalties. Therefore, when practitioners, as in the essayist's cases, put these young women on the best possible hygiene, put them back as nearly to nature as possible, they relieved their dysmenorrhea.

In old maids, for instance, who were laboring women, who could not take trips to Europe or go to Springs, surgeons would have to remove the tubes, if diseased, in order to afford relief. He did not believe it was fair, however, to remove a young woman's ovaries because she had dysmenorrhea. If one had to do something to relieve her pain, remove the uterus, as it had no special function except to procreate; but the ovaries had other important functions, and it was an invariable rule with him never to remove the ovaries of young women unless it was absolutely necessary.

DR. JOHN A. LYONS of Chicago sounded a note of warning, namely, to have the husband's consent before removing everything the surgeon thought was necessary. In a case of hysterectomy, recently performed, he incidentally examined the appendix, found it diseased, and removed it, and, as a consequence, nearly had a malpractice suit on his hands because he removed the appendix without the husband's consent. The surgeon should have a *carte blanche* to do what he thought was right.

DR. ERNST JONAS of St. Louis, Mo., said the paper was timely. It called attention to the difference between painful menstruation and appendix troubles. Knowing the intimate relation between the appendix and the infundibulo-pelvic ligament, one could easily understand that a diseased appendix gave pretty nearly the same symptoms as a genuine case of dysmenorrhea. He recalled the case of a young woman in St. Louis who had been suffering from painful menstruation for several years. A few months ago she telephoned to a physician and asked him what he could do to relieve her. He gave her something for the pain, and the next day he found an extreme case of peritonitis as a result of perforation of the appendix, and in order not to have such unfortunate experiences he thought the paper was timely.

DR. RUFUS B. HALL of Cincinnati agreed largely with the essayist that a patient might have and did have her appendix involved in a chronic inflammation at the time of the menstrual period. Occasionally cases were seen where the appendix was involved in adhesions, necessitating an operation for relief. In all abdominal operations like the two cases referred to, he was convinced that if the appendix had been examined at the time of the operation for the removal of the ovaries there would have been found sufficient pathology in the appendix to have justified its removal at that time. Therefore, we could not, in his judgment, emphasize too strongly the necessity of examining the appendix in every case where the abdomen was opened.

DR. REDER, in closing the discussion, said he did not wish to convey the impression that the treatment he had advocated depended on the removal of the ovaries. All were familiar with the condition of the ovaries and their physiological functions; therefore, conservative measures should be directed toward them. But in the case mentioned there was a mistaken diagnosis, and, furthermore, pathological ignorance on the part of the operator; still the ovary was the seat of trouble, and it was taken out. There were different operators; it was not the same operator in both cases, but both ovaries were removed. The question arose whether all of these appendices should be removed. He felt they ought to be, but unless the patient came to him and said she would like to have her appendix removed, he would not take it out. There was usually a rise of temperature in menstrual conditions. It was only in those cases where the attack had been severe that he would urge on them the advisability of having the appendix removed; but in those cases where the women were confined to bed for two or three days, and then felt perfectly well again, he would not urge the removal of the appendix.

LITHOPEDION OR LITHOKELYPHOPEDION, THIRTY-TWO YEARS OLD, SUCCESSFULLY REMOVED FROM A WOMAN SIXTY-SEVEN YEARS AND SEVEN MONTHS OF AGE.¹

BY

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(With two illustrations.)

THE subject of tubal gestation has been very thoroughly discussed by the members of this Association, but I do not think we have ever seriously considered the remote changes which take place in the products of extrauterine pregnancy, nor have I ever seen a specimen exhibited at our meetings. The natural tendency of all aberrant pregnancies is to spontaneous termination by rupture of their enclosing envelopes, whether the pregnancy be tubal, ovarian, or tuboovarian, and in the great majority of cases this is also true in the interstitial or tubouterine variety; but, in this class, delivery of a full-term baby is possible through the uterus *per vias naturales*.

After rupture has taken place, which is usually the case between the sixth and tenth week, the embryo is absorbed or must be removed by operation, either on account of the hemorrhage and fatal collapse, or the sepsis which results from the disintegration and breaking down of the extravasated blood clot. If, however, a favorable rupture takes place, and the embryo attaches itself to some other structures, it may continue to grow and be delivered at term by abdominal section; or, if left to itself, spurious labor sets in, the fetus dies, the liquor amnii is absorbed, and the gestation product either breaks down and discharges itself piecemeal through the bowels, bladder, rectum, or abdominal wall, or it may remain in its sepulchered nest indefinitely, if protected from air and the gases of the bowels, and undergo calcareous degeneration, mummification, or maceration. Sometimes the calcareous incrustation is confined to the membranes, when the specimen is called a lithokelyphos, and, if the deposit engages both membranes and

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

superficial tissues of the fetus, a lithokelyphopedion; and, if the embryo alone is calcified, a lithopedion.

These different changes depend upon the location of the fetus, the amount of moisture surrounding it, and its proximity to the bowels. If an adhesion exists between the sac itself and the bowel, and the sac has been thinned out by distention so that gases



Fig. 1.—Lithopedion. Cyst intact.

and bacteria pass freely and easily into the gestation sac, decomposition and abscess formation take place very rapidly; but when the membranes are thick and the product is deposited well down into the broad ligament between its layers, and is thoroughly and strongly walled off, it may remain without producing any very great discomfort, and cases are on record where lithopedia have

been removed by postmortem after being carried for fifty years and more.

What is responsible for these strange pathological anomalies and freaks of nature is an interesting study, and what enables one peritoneal cavity to tolerate and encourage such a foreign body, while another immediately rebels, is not so easily explained. So much has been taught us during these last few years on natural



Fig. 2.—Tumor sawn open, showing fetal parts.

resistance and increased leukocytosis that we fall back to them for a ready explanation to account for this strange behavior of an ectopic ovum, and if we add to them some peculiar combination of salt and calcareous elements in the blood of the mother, we can understand how such stony productions are possible, just as a branch or a tree, falling into a stream of water, under suitable conditions, petrifies and becomes hard and adamantine, while under other combinations it softens, melts, and decays. Some-

times, when the fetus dies, the fluid parts are all absorbed, and the remnant dries up, desiccates, becomes mummified, and looks like a dead rat, or it is converted into what is called adipocere, which is a substance intermediate between fat and wax; it is white in color and is formed by the union of a fatty acid with ammonia, the fat being supplied by the fat in the tissues of the ovum and vernix caseosa, and the ammonia is generated by decomposition.

In the literature of this subject, and the numerous articles referred to in the index catalogue of the Surgeon-General's office at Washington, many cases are reported, some going back to 1595 by Venetiss, 1597 by Albosius, 1661 by Deusingeus, 1661 by Eyssonius, 1778 by J. G. Waller of Berlin, others more recently by Barnes, Case, Chiari, Sanger, Leopold, Tate, Clarke, Lusk, Bandler, Price, McMurtry and others. In none of these cases was the specimen so perfect as mine and none in whom the specimen was so old and removed by operation. In many it was found post-mortem, and in some suppuration had taken place, the tumor presenting at the abdominal wall or in the vault of the vagina, and after the pus and fluid contents had discharged, the fetus was removed either *en masse* or in pieces by enlarging the original point of rupture.

The history of my case is as follows: Mrs. A., age sixty-seven years and seven months; was married when twenty-two years of age. Periods were regular and without pain or special inconvenience until she was thirty-five years of age, when she missed for the first time in her married life. She sent for the family doctor, who told her she was pregnant. She suffered great pain in the lower part of her abdomen on the left side, and was up and down in bed and on the lounge during the greater part of her early pregnant months; in fact, so great was the pain at times that she did not believe she was in the family way. However, she began to grow larger, and at about the fifth month she felt life, although not strong. Later she made preparations for her confinement—got her baby clothes in order and engaged her nurse.

At the end of the ninth month she was seized with pain, and there appeared a vaginal discharge of blood. The pains were not very severe or tumultuous, but the loss of blood was considerable and continued for some days; clots the size of her hand were often discharged. The doctor was sent for; he examined her, told her she was in labor, and that the baby was living. After many hours of fruitless effort, the pains gradually subsided. She did not re-

main in bed, but was up and down; the swollen belly got smaller, and in a few weeks she was able to be outdoors, and soon was about the house doing her household duties. She was always conscious of a large swelling in the abdomen, particularly on the left side, but gradually this got smaller, and in a few years she suffered no inconvenience whatever. She passed through the change of life without incident, and required the services of a doctor but very seldom during her whole married life; she never had any children.

She was sent to me in January, 1907, by Dr. Ballou of Garden-ville, and I saw her with him at the German Deaconess's Hospital. For some weeks previous to her entrance to the hospital she had been having a good deal of pain; was growing every day weaker; had lost her appetite, and was swelling in the abdomen. Upon examination a large, hard tumor could be felt, filling the whole of the pelvis, particularly in the left side, and the cervix uteri was pushed up toward the right. A diagnosis was made of a large, hard, fibroid tumor in the left broad ligament, with free fluid in the peritoneal cavity. She was kept under observation for a few days, an attempt being made to improve her physical condition, which was bad. She improved but little, and we decided to operate at once, after the necessary preparations were made.

Upon opening the abdomen through a median incision, a large amount of straw-colored fluid escaped. The adhesions which existed between the omentum and bowels and the tumor were easily broken down, and it was at once evident that we had to deal with a large intraligamentary mass. So the broad ligament was split along its upper portion, the folds of the mesometrium were freely separated, and an attempt was made to deliver the hard, calcareous tumor. The atmospheric resistance was almost insurmountable, but gradually a finger and then another were pushed under the floor of the tumor, the suction being thus overcome when the tumor shelled out with a jump. There was practically no bleeding, so the ragged edges of the ligament were trimmed, a few basting stitches inserted, a small piece of gauze was pushed into the deepest part of the cavity for drainage, and the abdominal wound was quickly closed. She reacted promptly, in a few days was out of danger, and continued to do well throughout her entire convalescence, leaving the hospital five weeks after the operation, and was driven home in a buggy, a distance of about ten miles. She did well for some weeks, but during a sudden cold spell con-

tracted a subacute pleurisy, with effusion, and died in April, 1907. I saw her at her home before she died, and with a hypodermic needle confirmed the diagnosis, and Dr. Ballou subsequently aspirated the chest and removed considerable fluid. She, however, slowly grew weaker and weaker, and died of exhaustion and heart failure a few days later.

The specimen, which is globular in shape, and looks like a bullock's heart, weighs 2 pounds $4\frac{1}{4}$ ounces. It is surrounded by a dense, hard covering, which is about as thick as thin cardboard, and by letting the specimen drop upon the floor the noise made is as if a solid stone had fallen. After sawing through the outer envelope the fetus is seen firmly bent upon itself; the arms and legs are flattened like bands. The calcified membrane is firmly adherent to the head and spine and back of the legs and arms. The abdomen, chest, side of head, or arms, legs, and fingers—and even finger nails—are in perfect preservation, the sex being determined by the little penis and scrotum. The placenta is present, the cord is thin and glistening in color, and is unusually well preserved. I also append photographs of the tumor, and also one with the outer envelope cut through and the fetus extended, so as to get a good picture.

493 DELAWARE AVENUE.

DISCUSSION.

DR. O. H. ELBRECHT of St. Louis, Mo., reported a case of TUBAL ABORTION, WITH COMPLETE DETACHMENT OF THE FETUS FROM THE PLACENTA AT SIX MONTHS, RESULTING IN OMEN-TAL ATTACHMENT AND BEGINNING LITHOPEDION.

The patient was admitted to the Female Hospital, St. Louis, August 7, 1906. She was 31 years of age; German; occupation, housewife; had had three previous labors; two children alive, one dead; no abortions; weight, 117 pounds; size, five feet, two inches; previous general health had been very good up to the past few weeks, when she suffered with cramp-like pains in the abdomen and small of the back. Bowels regular, and eighteen urinalyses were made during her stay at the hospital, but all were negative. Last menstruation, January 26, 1906; date of quickening, June 15. August 1, patient had done some washing, and in the evening she became sick with cramp-like pains in the back and right side of the lower abdomen. The pain came on gradually, but suddenly increased to severe pain, so she sent for a physician, who prescribed and relieved the pain for the time being, but for two days following she had some pain and headache. There was absolutely no bleeding from the vagina during the attack. Since that time she had felt no fetal movements, and at present was somewhat

weak and tired, and had some pain in the small of her back. Temperature, 98°; pulse, 96; respiration, 22. The accelerated pulse was thought to be due to excitement incident to leaving her children and coming to the hospital. There was no evidence of syphilis or rickets; chest was normal; bacteriological examination of vaginal secretions for gonococci by Gram were negative.

The pelvic measurements were: Interspinal, 26 cm.; intercrystal, 29 cm.; bitrochanteric, 31 cm.; external conjugate, 20 cm.

The abdomen was ovoid and its greatest circumference was 79½ cm. The abdominal wall was of such thickness and tension that palpation was difficult, hence the exact height of the fundus was not determined. The fetal parts could not be outlined, and no fetal heart sounds were audible on auscultation. On vaginoabdominal and rectoabdominal palpation the cervix was found opened sufficiently to admit one finger. The uterus was central, softened and enlarged, and a large, hard mass was found to the right and slightly posterior to it. It was slightly movable, and gave but very little discomfort on pressure. There was no special indication to operate immediately, for the reason that the patient was comfortable, but she was kept under close observation.

Dr. Elbrecht presented an illustration showing the characteristic configuration and beginning calcification about the scalp. The roughened surfaces on the anterior part of the trunk and on the contorted extremities showed the attachment of the omentum.

After referring to several blood examinations that had been made, he stated that his purpose in waiting up to this date before operating was to give the fetus a chance to develop to a viable age, if alive, for since the woman was under constant observation there was little danger in this, as immediate operation could have been decided on had she developed any untoward symptoms.

Laparotomy was performed on November 17, 1906, and disclosed the following interesting pathology: The fetus was partially enveloped by the thoroughly adherent omentum and was located in the region of the umbilicus, or even slightly above it, and showed no trace of any cordal attachment to the placenta, which was plainly visible in the right tube. The ostium of the tube was perfectly sealed by the membranes and contained about one-half ounce of fluid, apparently serum. The entire placental tissue occupied only the outer third of the tube, which was greatly distended and thickened, and thus accommodated the amount of pressure it withstood before aborting, and there was no protrusion or external evidence of a cord. This proved that the cord must have been stretched or torn off, and subsequently macerated and absorbed, and that after the abortion was complete the tube collapsed on the placenta, its membranes plugging the open end sufficiently to prevent a severe hemorrhage. She undoubtedly had some hemorrhage when the abortion occurred, but there was no trace of it at the time of the operation. Salpingo-oöphorectomy was done by cutting the cornu of the tube out of the uterus by an elliptical incision to insure the entire removal of mucous mem-

brane, and the wound thus made and the broad ligament were sewed with a buttonhole stitch of catgut. The fetus was detached from the omentum by ligatures, and the appendix, which was retrocecal and held down by adhesions, was also removed. The patient had an uninteresting convalescence. The uterus was curetted at a later date to insure the removal of decidual membrane, but none was found. Evidently the membranes were passed spontaneously and escaped the notice of the patient. The patient improved greatly in general health while under observation, having gained about twenty pounds in weight during her stay in the hospital. On close inspection of the fetus, grayish-white spots were noted, superficially on the skull and in various locations, which looked like early calcareous formations, and it was the author's belief that this would have been more typical had the specimen remained longer. The contour of the head and the contortion of the extremities were also characteristic of lithopedion.

DR. ERNST JONAS of St. Louis, Mo., referred to a specimen which he presented to the Southern Surgical and Gynecological Association in 1900. The case was very unusual. At the beginning of the third month the ovum had slipped away from the right tube and had implanted itself in the region of the liver. It changed the liver tissue and peritoneum which covered the kidney tissue and was able to keep up nourishment of the child to full term. The child was delivered at full term by Dr. Tuholske. The mother died of hemorrhage when an effort was made to remove the placenta. Considering that there was no contractile tissue in this region, it was easily understood how the patient had a fatal hemorrhage.

DR. JOSEPH PRICE of Philadelphia said there was scarcely an operator present who had not had similar experiences to those that had been related. Probably the cases were not of such long-standing, and so full of calcareous degeneration. He recalled a large specimen of this nature with a foot protruding from the sac. This case was beautifully illustrated, and fully reported in the Transactions of the Association. The essayist had failed to call attention to a noted historical case in his own city, where a woman in the presence of an old fetus, not a lithopedion or calcareous degeneration, gave birth to two or three children. It was removed by Dr. Mann, assisted by Dr. Park. It was necessary to do extensive surgery, some bowel suture, and resection. The woman made a good recovery. Both surgeons worked in this operation to save time. Dr. Price reported two or three interesting cases of ectopic gestation in connection with the specimen exhibited, which had a bearing on the subject.

DR. E. GUSTAV ZINKE of Cincinnati, Ohio, said that history was full of such cases, but most of them did not terminate so fortunately, many of them ulcerating through the bladder or rectum. In examining the specimen that had been exhibited, there was a gestation sac, which was probably the only structure that had

undergone calcification. The fetus itself was not a so-called lithopedion, because soft structures could still be found. In order to have a genuine lithopedion everything must be calcareous in character. While the gestation sac in this case had undergone complete calcification, the fetus was quite soft and the hardness was due solely, he thought, to the pressure and the drying of the muscles. One could feel the skeleton plainly through the specimen presented, and he did not think it right to say that the specimen belonged to the lithopedion variety.

DR. HAYD, in closing the discussion, said he was familiar with the cases mentioned by Dr. Price, and particularly with the Buffalo case, he having assisted Dr. Mann in this operation. Dr. Mann operated with a history of continued suppuration and found a mass which resembled a dermoid cyst. There was a classical case reported by Dr. Lewis S. McMurtry in the Transactions of the Association, and which was also given in detail in Reed's book on gynecology.

OPHTHALMIA NEONATORUM; A PATHOLOGIC ANACHRONISM.¹

BY

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It is now almost a quarter of a century since Carl S. F. Credé of Leipsic presented to the medical profession in an epoch-making paper, a discovery of such tremendous importance that its value has not been fully realized up to the present day. In the *Archive für Gynecologie* of October, 1883, Credé announced that by allowing a single drop of a two per cent. solution of nitrate of silver to flow from the end of a glass rod one-eighth of an inch in diameter upon the cornea of a new born child he had reduced the infections causing ophthalmia neonatorum in his great obstetrical clinic from 10 per cent. of the total number of births to two-tenths of 1 per cent. The importance of this announcement will be better understood when it is borne in mind that at that time, when many of us were students or young practitioners, the new science of medicine had but just been born. It was only four years before that Neisser had isolated the gonococcus, and I remember very well strangling in a carbolyzed atmosphere in an endeavor to see

¹An address delivered by invitation at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

Billroth apply the principles of Lister. Your distinguished president—then a young man—had but just written that inspiring little monograph, which, though overshadowed since by his greater work, nevertheless served as an inspiration to thousands of young American surgeons, "How to Treat Wounds To-day," and the whole medical world was awakened and had become keenly alive to the importance of microbial infections.

An additional importance was given to this great discovery by reason of the frightful virulence of the infection which it was found to control. The ugly, deformed, staphylomatous eyeballs, resulting from the corneal ulcerations of this disease, were seen everywhere. With the exception of smallpox, no single infection had begun to compare in the virulence of its results with ophthalmia neonatorum. Fully one-quarter of all of the pupils in the asylums for the blind were victims of this malady, and when, therefore, the statement was made by one of the most careful and dependable obstetricians in Europe that, by this absurdly simple precautionary measure, the child's chances of escaping the infection were increased fifty times, then obstetricians everywhere began repeating the experiments of Credé, and from enormous numbers upon which to base their statistics obtained singularly uniform results.

From tables published by Kostling of Halle, in 17,767 births with no treatment, 9.2 per cent. developed the ophthalmia of infancy, while in 24,723 births, in which the prophylactic treatment of the 2 per cent. nitrate of silver was employed, the infection developed in 0.65 per cent. In 4,000 births at the Sloan Maternity Hospital in New York during a period of six years, in which Credé's method was employed, not one case of ophthalmia developed. Later, in 1886, Credé reported 1,211 births, with 3 but slightly affected, or 0.25 per cent.

Other microbicides were tested for their prophylactic virtues—carbolic acid, iodoform, bichloride of mercury, the newer silver salts, protargol, argyrol, and even simple lavage with plain water. All had their advocates, and statistics were published galore. Indeed, a distinctive literature has appeared, so popular has the subject become, which if assembled would make large volumes. Meantime, too, scientific medicine had not been quiescent in other directions. We had learned how to drive yellow fever from its noisome haunts. We had hunted the typhoid germ to its polluted source. We knew under what conditions the bacillus of tubercu-

losis flourished and under which it faded away. Then, of course, in the case of a superficial infection like that which produces ophthalmia neonatorum, the nature and time of entry of which have been perfectly understood for more than two score of years, and which prophylaxis places almost absolutely under control, the disease must be practically wiped out of the land, and its ravages seen no more forever.

Let us see. The city of Buffalo is perhaps one of the most fortunate sections of the United States in the protection which it legally affords the new born child. For fourteen years it has had a law requiring midwives to attain a certain standard of proficiency in their work, this to be determined by a board composed of capable and reputable physicians. There exists also a law that every midwife shall at once report to some physician the existence of a case of ophthalmia neonatorum when it becomes known to her, under penalty of a fine. The Health Commissioner, Dr. Ernest Wende, has the deserved reputation of being one of the most capable and efficient public servants in this work in the United States.

Some months ago Dr. Wende sent return post cards to each physician engaged in the practice of obstetrics, to each midwife in the city of Buffalo, and to the superintendent of each hospital receiving lying-in cases. On each card was a request that a statement be made as to the number of cases of ophthalmia of the new born that had occurred in the practice of the person receiving the card or in the institution during the previous year; what, if any, prophylactic had been used, and with what result. The total number of births in the city of Buffalo during the previous year had been 8,500. The returns did not include hospitals or other lying-in institutions in which, as Hubbell has shown, the frequency is much greater than in private practice. The total number of cases reported was one hundred and two, and if we add the unreported cases it will undoubtedly show ten times as many infections as should have occurred had adequate prophylaxis been employed.

"But," said the editor of a rather prominent southern journal shortly after the appointment of a committee on ophthalmia neonatorum by the president of the American Medical Association at its meeting at Boston in 1906, "does it not seem strange that legislation should be considered necessary to urge physicians and midwives to do their duty? We question very much that blind-

ness due to ophthalmia will become much reduced by such legislation. The disease is certainly much less dreaded now than formerly, and Credé's method is more generally used; consequently, an additional legislative act seems an unnecessary burden on the statute books."

Is this disease, then, well understood and under control, and is the method of Credé generally and correctly employed? The secretary of your Association, who is president of the New York Board of Medical Examiners, refused recently to allow a medical applicant to qualify because, among other errors of knowledge or judgment, he advised as a prophylactic for ophthalmia neonatorum the 1 per cent. or 2 per cent. solution of nitrate of silver dropped in the eyes every 15 to 30 minutes. An examiner of undoubted ability and broad experience demurred at this ruling, saying that the remedy was right and the dosage was correct—the error was in its too frequent application, asking whether nature did not take care of such cases and whether disaster might be apprehended in consequence.

"I have been astonished," writes Dr. de Schweinitz, "in this comparatively enlightened age to find the appalling practices which go on among the poor in the Italian, negro, and other quarters of the city. It would seem to me that there is not any foolish thing that some equally foolish midwife will not put into the eyes of a new born baby provided there is any irritation. I will not burden this letter," he continues, "by citing instances of the appalling ignorance of certain physicians in regard to the proper method of employing silver under these circumstances, except to quote a case recently seen, where a physician used a 2 per cent. solution of nitrate of silver—a drop in each eye of a new born babe three times a day for three days, when there was not the slightest reason for its use, except a small discharge at the inner angles of the eyes totally free from the presence of gonococci. As a result the baby has a large white scar over one cornea and a smaller one over the other."

But, you urge, the standard of medical knowledge has been raised so much during the last twenty-four years that even if infections do occur, notwithstanding the neglect or mismanagement of a gonococcic or other microbial conjunctivitis in an infant, the resulting blindness or serious injury to the eyes must be an exceedingly rare occurrence, and it can no longer be a prolific cause of blindness. In the New York State School for

the Blind children are received between the ages of five and twenty-one years. Many of those newly entering are of kindergarten age. Among those registered during the past four years—which shows how recent had been their affliction—26 per cent. had their blindness assigned by careful examiners to ophthalmia neonatorum, while 39 of the 150 registered, or one-quarter of the whole number, had their eyes, and consequently their lives, offered as a sacrifice to this Moloch of ignorance and neglect.

Philadelphia is certainly one of the most enlightened medical centers in the world. At Overbrook, one of its suburbs, is the school for the blind, concerning which Professor Allen, for many years its superintendent, writes me: "It happens that I have by me the main causes of blindness in percentages of the 536 pupils during my administration—or between 1890 and 1906 inclusive—a period of sixteen years. In this table ophthalmia neonatorum figures 29 per cent. of the whole. These cases were assigned by our own oculist," he writes, "Dr. George C. Harlan, and I think there is no mistake in the compilation of the averages."

Recently Mr. Simeon Snell, in a communication to the British Medical Association, reported that of 333 inmates of the Sheffield school for the blind, 136, or 42.36 per cent., had been blinded by ophthalmia neonatorum. These startling figures led to the unanimous passage of a resolution, proposed by Mr. Stevenson and seconded by Dr. Karl Grossman, that in the opinion of the section on ophthalmology the time had come for the British Medical Association to take action toward the prevention of ophthalmia neonatorum.

While I am not prepared to admit that our results are quite as bad as these figures would indicate—for in our schools for the blind are only the young, among whom the victims of ophthalmia neonatorum are always much the more numerous—we still must admit with humiliation and chagrin that the lesson which *Credé* taught has not been adequately learned. We have followed false gods in seeking easier methods, and our asylums are full of needless victims. But are all of these cases of blindness occurring in the schools of recent origin? Is it not possible that these blind children in the schools are the product of earlier negligence, and that more modern methods are now in use?

In the State of New York, as determined by the special commission, there were found to be 6,200 blind persons. Of these 569 were under one year of age, and under four years, including

those under one year, were 959 children. In the State of Massachusetts, among 3,306 blind registered, 661, or more than 20 per cent., had become blind before their fifth year. If we exclude ulcerative conditions, due to bad hygiene and insufficient nourishment, which ought to be controllable, and congenital blindness, which in many instances can be avoided by preventing the congenitally blind from mating, we may safely assume that one-half of this number, or 10 per cent. of the whole, have given their eyes as a tribute to ignorance or neglect.

Such statements as these must give us pause. What do they mean? It would seem that while we have been combating more spectacular maladies—bringing our sanitary batteries to bear on typhoid, yellow fever, and tuberculosis—this elusive, if no less vicious malady, has in some degree at least escaped us. It is endemic but sporadic. It occurs only in from one in fifty to one in two hundred cases. The busy general practitioner, chiefly occupied with the better classes of society, may not see a case in years; meanwhile, he forgets its virulence and malignancy, and when his attention is called to the red, swollen, suppurating eyes of the baby—the mother being already convalescent—he thinks that any intelligent physician is capable of treating a conjunctivitis; indeed, he has been told so by the editor of one of our medical journals, and he uses *secundum artem* as he thinks a 2 per cent. solution of silver nitrate every two hours or a 10 per cent solution of argyrol once a day. When, finally, the cornea sloughs, the curtain falls, and the light of those baby eyes is extinguished forever, he honestly believes that the virulence of the attack was such that no skill could have averted disaster. “He done his damndest. Angels could do no more.”

But it is not chiefly at us of the medical profession that the accusing finger can with justice be pointed except for our sins of omission for responsibility not sustained. The negligence, the ignorance, the indifference concerning these conditions, find their apotheosis in the midwife. Permit me, if you please, to quote from a careful study of this subject made by a trained nurse, F. Elizabeth Crowell, on the “Midwives of New York,” which appeared in *Charities and the Commons* for January 12 of the current year, and which will stand doubtless for the same class, whether they appear in Oakland or Oklahoma. Of one Italian midwife it is written, “her home was of the dirtiest, the condition of her hands was indescribable, her clothing was filthy,

and her bag beggared description." As to the midwives' homes, 106 were absolutely filthy, as were the clothing and person of the midwife herself. As for the bags and their equipment from a professional standpoint, by far the greater number would make fit decorations for a chamber of horrors. Rusty scissors, dirty string, a bit of cotton, a few corrosive sublimate tablets, old rags and papers, some ergot and vaseline, a gum catheter wired, were the usual contents.

Please God, these conditions will have been bettered by the recent law passed for Greater New York, putting these women under the control of the Health Department, for there are between nine hundred and one thousand of them (many, indeed, well trained, cleanly and intelligent) who were present during the past year at the confinement of 43,834 mothers in the metropolis—about 42 per cent. of the whole number of births. In the city of Buffalo, with a population of nearly 400,000, at about half of the births a midwife presides. In all probability, a like proportion obtains in every community in which the population is largely foreign. With regard to the prevalence of ophthalmia neonatorum there are no available statistics for New York City. The provision of the sanitary code regarding the reporting of contagious diseases to the Board of Health is practically a dead letter in connection with this particular disease.

What, then, is to be done? The control of the conditions producing this vast amount of unnecessary blindness is entirely possible and practical. Two factors are essential: first, more enlightenment—a broader, more general, popular knowledge of the causes and measures to be employed for its prevention; second, perfectly organized and coordinated effort in securing its control. The first is dependent upon the second. It is to us of the medical profession that the intelligent laity is looking for advice and instruction. Already societies for improving the condition of the blind and the prevention of blindness are asking what they can do to remedy the evil, and they can take no step—they can advance no movement—except as they have the authority and support of those who know what to do and how it should be done. Said that wonderful young woman, Helen Keller, a few days ago at a great meeting at Boston, speaking of blindness due to ophthalmia neonatorum: "The problem of prevention should be dealt with frankly. Physicians should take pains to disseminate knowledge needful for a clear understanding of the causes of blindness. The

time for hinting at unpleasant truths is past. Let us insist that the States put into practice every known and approved method of prevention and that physicians and teachers open wide the doors of knowledge for the people to enter in. The facts are not agreeable reading. Often they are revolting. But it is better that our sensibilities should be shocked than that we should be ignorant of facts upon which rest sight, hearing, intelligence, morals, and the life of the children of men. Let us do our best to rend the thick curtain with which society is hiding its eyes from unpleasant but needful truths."

Said Dr. Juan Santos Fernandez, the distinguished Cuban ophthalmologist, and an honorary Fellow of this Association, touching upon this subject: "The important thing is to bring before the public mind, by means of constant propaganda, a knowledge of the danger to a recently born child, who is at all affected as to the eyes, the great harm which a husband affected with gonorrhea, may cause his wife or offspring, and, side by side with these, to call the attention of the family to the facilities which the authorities will furnish them to guard against blindness. This," he continues, "would be worth much more than penalties, and if there were a physician paid by the State (and in every county in the United States may such a health officer be found) to attend to the poor children affected, or to prevent their becoming affected, and this fact were to become known to the poor, they would surely seek his assistance, and he could fulfil his duties."

The campaign of education must be conducted along two distinct lines. As Stephenson has shown in his recent monograph on this subject, "It might be thought that medical practitioners needed no instruction as to the ways of preventing ophthalmia neonatorum, and doubtless the majority do not! There remains, however, the significant fact that all of the babies who subsequently develop ophthalmia have not been delivered by midwives or uninstructed women," and Treacher Collins supplements this by saying: "Sad to relate, cases in which delay in the application of appropriate treatment has resulted in permanent damage are met with, where the mothers have been attended by a duly qualified medical man, and not by an ignorant midwife." It would seem to be essential, then, that exact information be conveyed to the members of the medical profession as to the manner in which the toilet of the infant should be performed—how the eyes should be cared for in order that they may be protected from infection.

Said Dr. W. O. Moore, in the *Medical Record*, nearly a quarter of a century ago, "if the physician would attend to the first bath of the new born and not leave the entire charge to a nurse,—perhaps an ignorant one,—much trouble and suffering might be averted." Schirmer speaks of this first bath as "giftwasser"—poison water—and simply dries the child's face, postponing the bath till the following day. Snell reports an almost absolute freedom from ophthalmia in the Jersop Maternity Hospital, simply by reason of exceeding care given to the toilet of the baby's eyes. "The patients," says Dr. Snell, "are among the poorest; some are inmates of the hospital, but the great majority are confined in their own homes. The midwives have received instructions that immediately the head is born, attention must be directed to the baby's eyes. Then with little pieces of lint moistened in tepid water the eyes are carefully washed, as well as the eyelids and parts adjoining. Subsequently in washing the child, care is taken to guard against reinfection. During the last three years there have been 2,242 labors among the in-patients and out-patients. In the first 200 there were a few cases of purulent ophthalmia, but in the last 2,000, since the method has been systematically adopted, not a single case occurred. Directions were also given to the nurses that if a child's eyes looked red it was to be taken at once to the hospital for a drop of nitrate of silver solution to be dropped into the eye." The plan depends for its efficacy on simple cleansing, and its success seems to be well worthy of note.

If these cases can be improperly handled by trained medical men, what must be done by midwives? Before these women can be instructed they must be known, registered, and made responsible. It seems quite impracticable to eliminate them entirely, but they must be made to show certain qualifications,—a certain amount of training, of fitness, of cleanliness, and decency. This means an organized health movement for the passage of State laws placing these irregular and limited practitioners under the control of the health authorities. They should be taught by lectures and simply but carefully worded instructions in their own language, how the toilet of the child should be conducted. In a circular issued by the Valentin Haüy Society for the Blind in Paris for distribution to midwives and mothers—and which is by far the best published, advice is given to the mother as to her personal care before and up to the time of the birth of the child, the precautions are detailed that should be taken to prevent oph-

thalmia, and the necessity is urged in black letter type of immediately seeking medical aid should the eyes of the child become at all inflamed. It cannot be hoped, however, even by the exercise of the greatest care to prevent the infection of every baby's eyes, although, as Stephenson says, with rigid care ophthalmia is brought almost to the vanishing point. The necessity for a prophylactic is emphasized.

Objection has been made to the classic Crèdè method because in a very few instances among the many thousands in which it has been employed excessive reaction has followed. The consensus of opinion seems to be, therefore, among obstetricians and ophthalmologists alike that while Crèdè's method properly employed is entirely safe and most effective in the hands of the trained accoucheur it might, if incorrectly used, give rise to undue irritation and it is advised, therefore, that the 1 per cent. solution of nitrate of silver, which is absolutely free from any danger to the eyes whatever and which does not produce silver catarrh, should in preference be employed by unskilled hands; but whatever prophylactic is used it should be prepared and gratuitously distributed by the health department. It should be enclosed in hermetically sealed and light-proof tubes or ampoules and the filing of the birth certificate which should be invariably required, would give the desired opportunity of placing the prophylactic in the hands of the accoucheur or midwife. The silver solution would then always be ready for use, would be of known strength and purity, of trivial cost and of incalculable value. A physician in Buffalo, whose routine practice was to use the Crèdè solution, omitted it twice in the course of a year because he did not happen to have a preparation of the silver in his bag. In both of these ophthalmia developed. Had these tubes been available half a dozen of them might be carried at once as the solution would be permanently stable and effective and two children would have escaped a danger which might have cost them their eyes.

The certainty too that the solution is of assured strength and purity when accuracy of dosage is of such great importance, must give added confidence in its use. In one reported case the error of a pharmacist made the preparation 20 per cent. of silver nitrate instead of the 2 per cent. called for, to the consternation of the doctor using it. The ampoules would prevent such errors.

If the midwife is to be held responsible for her neglect to use proper prophylactic measures under penalty of losing her license,

as she should be, then she should have the prophylactic put in her hands with fullest directions for its use, that no excuse may exist for omitting it. This measure, which is of first importance, received the unqualified endorsement of Dr. Sidney Stephenson in his admirable monograph on ophthalmia neonatorum, in which he makes it one of the measures recommended for the control of this disease and concerning which he says: "At present in England we do something of the kind with regard to calf lymph and antitoxin. The principle, therefore, already is conceded."

It does not seem practicable to put ophthalmia neonatorum on the list of communicable diseases. Considering the fact that it is so frequently of gonorrheal origin, many physicians feel that to report it, with the name of the parents, would be a breach of professional confidence, but for the health officer to take a semi-annual or annual canvass of the number of cases occurring in the practice of the physicians, midwives, and institutions of the locality, together with a statement of what, if any, prophylactic was used, with the resulting condition of the eyes in each instance, has a double value—namely, in serving to impress upon each one receiving the card the need of prophylaxis; and in obtaining statistics from which important conclusions may be drawn. It affords an opportunity, moreover, of conveying information to accoucheurs—that often may not, and soon would not, be necessary—but, meanwhile, it might be instrumental in saving eyes that would otherwise be lost.

The conclusions, in detail then, which are suggested are:

1. To secure the enactment of laws in each state or Federal territory placing the supervisory control and licensure of midwives with the Boards of Health; requiring that these unqualified practitioners be examined and registered in each county and that they be required to immediately report each case of ophthalmia occurring in their practice under penalty, if found guilty, of forfeiture of their license and a fine.

2. Distribution by health boards of circulars of advice to midwives and mothers giving instruction as to the dangers, method of infection, and prophylaxis of ophthalmia neonatorum.

3. The preparation and distribution by health boards of ampoules or tubes containing the chosen prophylactic. For midwives 1 per cent. solution of nitrate of silver is almost universally recommended by obstetricians and ophthalmologists. For physicians the Crèdè solution should consist of a 2 per cent.

solution of chemically pure fused nitrate of silver. If used as directed by Crèdè, one drop from a glass rod $\frac{1}{8}$ of an inch in diameter, it is free from excessive irritation and absolutely safe. To insure purity of the drug and accuracy of dosage the Crèdè solution should be given freely to physicians who make application therefor. This, however, should be merely advisory. The health department should be free to use such prophylactic as it may deem best.

4. Periodic report to Boards of Health by all physicians engaged in obstetrics of the number of cases of ophthalmia neonatorum that has occurred in their practice, whether or not a prophylactic was used—if so, what—together with the result.

5. The accomplishment of these measures by the appointment of committees through the various state and county societies whose cooperation would make concerted action possible.

6. To secure these ends the requested cooperation of the American Association of Obstetricians and Gynecologists, the Academy of Ophthalmology and Oto-Laryngology, the American Ophthalmological Society, the American Public Health Association, and such other organizations as may appoint committees on ophthalmia neonatorum.

If this plan of campaign be agreed upon with such modifications as obstetricians, ophthalmologists, and sanitarians may suggest, then a united and coordinated effort should be made to carry it into effect. If we would protect the babies—future citizens of the United States—from the poverty and misery of needless blindness, we must join hands and form a cordon reaching from Maine to Alaska and from the Great Lakes to the Gulf. The machinery is already in existence. It is but to act.

To what nobler work could the splendid organization of the American Medical Association lend itself than in furthering such a cause. Such an organized and concerted movement steadily and effectively at work throughout the length and breadth of the land, would mark a new era in which the sodality of medicine would become the chief factor in a social uplift. It would bind the fraternity together with closer ties in an effort to shield humanity from its own follies and frailties. It would practically abolish ophthalmia as a cause of blindness, thereby saving millions to the commonwealth and immeasurably increasing the happiness and efficiency of humanity throughout the world.

After a vote of thanks had been extended to Dr. Lewis for his interesting address, the President, DR. ROBERT T. MORRIS of New York, delivered his address. He selected for his subject

BACK TO AN OLD IDEA.*

It was President Morris's wish that his address be discussed.

DISCUSSION.

DR. JOSEPH PRICE of Philadelphia said it was not his habit to disagree with Dr. Morris with reference to rapidity in operating, but he could not agree with the statement that the ancient operators were sluggish in their methods. Three of the citations given came from valuable sources, so that they should be accepted as authoritative. In preantiseptic and preanesthetic days surgeons worked quickly. The speaker had had opportunities of seeing surgeons work in preanesthetic days, and it was very vital that surgeons did their work quickly to save life, and although some of them had been designated as heartless, cruel, and brutal, this was untruthful. They not only did their surgical work rapidly, but dextrously, largely due to the fact that the mother, father, son, or daughter held the legs and heads or other members while the surgeon passed the knife around an arm or leg rapidly and used the saw quickly. When a small boy, he recalled seeing two legs amputated in Virginia by Dr. Hinkle, a graduate of the University of Pennsylvania, who did the operation near a barn in the sunlight, following a threshing machine accident. The operation was very rapid, indeed. The patient recovered without a ripple. He had an opportunity early in his boy life of seeing a good number of eminent surgeons operate in a hospital in Baltimore, among them Nathan R. Smith. All of Smith's operations were done rapidly. Agnew and Levis were rapid operators. Agnew did stone operations in a minute or so. Both of the patients whom he saw operated on by Dr. Hinkle recovered without a ripple, and he thought without "laudable" pus. In ancient times they did amputations, operated on hernias, also resorted to tracheotomy, and occasionally to trephining. But the ancient surgeons were bad dermatologists, in that they lived on the surface. They did not invade the cavities of the body. Now, surgeons operated for stab and gunshot wounds, with only 50 per cent. mortality. He thought this mortality could be improved. The mortality now for abdominal work was near *nil*, notwithstanding the fact that patients were used in large numbers for object lessons. He was sure that the address of Dr. Morris would do him lots of good, and that hereafter he would probably change some of his methods.

DR. RUFUS B. HALL of Cincinnati thought the address of President Morris would do great good. He rose, however, to speak in opposition to one point, if he understood the essayist rightly, namely, that surgeons should ignore details inside of the abdomen.

*See paper, p. 561.

in order to shorten the operation. Taking, for instance, intra-abdominal operations, he believed that neglect of details would be a grave mistake. He could not conceive how surgeons should, even in an ordinary case, taking one case with another, neglect details in intraabdominal surgery for the sake of saving a few minutes' time. Under aseptic conditions exceptions might be made. If possible, he would like to have Dr. Morris state under what circumstances he would neglect details in the intraabdominal toilet for the sake of saving a few minutes' time.

DR. J. HENRY CARSTENS of Detroit said that some years ago he talked on this subject. A good surgeon needed a very fine Italian hand. Students spent year after year sitting on benches, reading, studying, listening to lectures, and writing, but rarely or never developed manual dexterity. In order to make a good and nimble surgeon, the hand had to be developed from the earliest youth. To make good, quick surgeons, they should start when they were children. They should learn to make baseball clubs, hatchets, and should be familiar with hammers and screws. They should know how to cut and chisel. In this way nimbleness of hand could be developed. It was the medical college the profession had to look to to help to make good surgeons, and in order to do that their graduates must be put in hospitals, carefully trained, and then in time they would become dextrous operators.

DR. MORRIS, in closing the discussion on his address, said that Dr. Price was evidently a firm believer in removing pathology; but sometimes the pathology and the patient were inseparable.

With reference to details, the matter of ignoring the detail of getting pus out of the peritoneal cavity was one point. He would ignore that detail. He had seen a good deal of distress caused by puttering over hemorrhage from adhesions. This hemorrhage from adhesions would keep up just as long as the surgeon kept on fussing in trying to pick up one bleeding point and then another. He had seen operators fuss for half an hour or an hour over hemorrhage, when the whole operation could have been done in ten minutes, and the oozing from these adhesions would have stopped in one minute. Judgment was required in determining what details to ignore. Dr. Hall, with his experience and good judgment, could ignore certain details in expediting his surgical work.

Dr. Morris said he was well aware that he was not talking to an audience of undergraduates; if he were, he would not dare say the things he was saying. Undergraduate students would not understand what the members were talking about, and if they in going into practice carried the idea of rapid operating and small incisions into their first work, many of their patients would die, they themselves would become disgusted, and the results generally would be bad. He was talking to experienced men. He knew his audience, and the things he said in connection with this new principle, which he believed was to become a dominant principle in surgery, were only for experienced men.

Another object-lesson: If a surgeon removed an ovary, the patient would have less disturbance than if he removed an ovary and tube. If he should remove an ovary and a tube, the patient would have less disturbance than if he removed an ovary, tube and uterus. If he should remove an ovary, tube and uterus, the patient would have less disturbance than if the surgeon went further and also removed the appendix. This was an observation that was common to all experienced surgeons, and if it was recognized at its face value and carried to its logical conclusion, he thought they could apply this principle to all of their work.

PREMATURE INTERRUPTION OF PREGNANCY.¹

BY
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OUR programme, as usual, is replete with papers discussing the classic and more scientific medical procedures necessary in the present-day practice of the healing art. This is especially true of those conditions requiring gynecology or surgery for any abnormal complication existing or following in the wake of obstetrical practice. It can truthfully be said that the special branch of obstetrics and gynecology has kept fairly abreast of the rapidly advancing medical times, and the child-bearing woman to-day stands a better chance, no matter what the complications, than she has had heretofore in the world's history. This, indeed, is commendable, and due in a great measure to the magnificent papers prepared at enormous labor, read and discussed with such advanced thought by the members of this and similar organizations, so that the medical practitioner, the midwife and even the pregnant woman who reads should act intelligently; and the physician, if he does not perform the capital operations himself should, at least, know where to find capable assistants or masters of scientific surgical skill.

In this paper it is my desire to emphasize earnestly a few thoughts not only of my own, but of others, having special reference to the practice of criminal abortion. This subject is not by any means new to obstetricians, but what I shall say is merely intended to accentuate a topic that presents a sad side of medical contact with human life.

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

Let me repeat the words of Dr. J. Ross Snider,¹ at Atlantic City in June of this year, who said: "The position assumed by modern society with reference to the unborn child is a subject which has proved so inviting to sentimentalists that physicians, as a rule, discuss it reluctantly. But the possible physical effects on our women and our children of a widespread revolt against maternity is a question that medical men, no matter how much against their liking, must consider and answer." Dr. Snider further said: "I know of nothing more nerve-wasting, nothing more cruel, than the way newly-married girls are beset with older married women, bringing ghosts of child-bed and bugaboos of child-care with which to haunt the bridal-chamber." And later, in analyzing the home, he says: "The surprising and distressing feature is that there is still a large number of marriages in which child rights are entirely ignored, or are not sufficiently considered to keep the family intact." Without entering into a detailed study of the complex causes that have brought about the wreckage of 1,400,000 homes in the United States within the last twenty years, it is seen at once that a home with "frenzied finance" on the one hand, and restless indolence on the other, is encompassed by much that is favorable to a history of unhappiness, for in some of these homes those who should become happy parents are too busy in money-making or in social strife to give either love or heed to a child; no wonder, therefore, that divorce or fetal murder, or both, are rampant everywhere; hence a campaign of education is necessary for the older as well as the younger married woman.

It has been said with considerable show of truth and justice that the laws controlling the conduct of abortion, especially of criminal abortion, should be left to the control or regulation of the medicolegal or medical jurisprudence societies of the several states. A careful study from either a legal, a medical, or a humanitarian point of view will soon convince a student of this subject that the language of our penal statute is so exceedingly vague that nearly all criminal abortionists, if well defended as they usually are by able attorneys, escape Scott-free from nearly all courts of justice in nearly all the States of the Union; for, as is truthfully claimed, in this country the people accused of this crime, are entitled to the greatest benefit in the construction of the language of the clause in our statute covering criminal abortion. It may be because of this fact, and for the further reasons that it is not deemed the particular business or concern

of either State, county, or city governments that hundreds if not thousands of murderers are abroad in our land, holding high their heads. Those with careless *sang froid* appease their itching palms with the ill-gotten gain of criminal abortion and with perfect security destroy thousands upon thousands of fetal forms, and with cool indifference send to terrible untimely deaths from puerperal sepsis hundreds upon hundreds of misguided women in the towns and cities of this broad land.

Simply because a penal statute is capable of being wrongfully construed, and may, when ably presented to court and jury, be the means of setting such a murderer free, or on the other hand be the means of convicting a perfectly innocent party, is no reason why it should not be enforced.

And why should this state of affairs exist? If concerted action be taken the evil may easily be overcome. By displacing the vague, confusing, and verbose language of the present clause in the abortion statute, and adopting the Federal laws, or in the laws of each State an abortion clause, such as that suggested by Wm. W. Smithers, a member of the Medical Jurisprudence Society of Philadelphia, the abortionist would soon be forced out of business. The clause formulated by Smithers is somewhat as follows: "Whosoever shall by any means whatsoever commit, bring about or attempt to commit or bring about an unlawful abortion, or whoever may aid or abet in such abortion or in the bringing about of such an abortion, shall be guilty of a felony." Such a clause, short and so strongly worded, would not be easy of misconstruction. Make these people felons and their punishment is already established, and having a wholesome fear that this punishment will be enforced, they will not be so free in committing these crimes.

That changes of a radical character are needed and should be worked for earnestly by every member of this and all medical societies, is apparent to every one who will give the subject patient thought. To substantiate this, it is only necessary to repeat the sweeping charges made in July last by the Chairman of the Chicago Medical Society Abortion Committee, that more than 50,000 immature and premature children are killed in Chicago annually by these criminal abortion fiends, who are exceedingly hard to trap and to convict. It was also said that a certain non-graduate, decrepit and over eighty-two years old, while languishing in the Cook County jail, boastingly admitted having

produced five thousand criminal abortions without having any serious trouble with the police.

I am informed there exists in the city of Chicago a regularly organized union of physicians who do nothing but this kind of work. They have lawyers retained by the year to advise them, and it is almost impossible to secure evidence against any member of this vicious trust. But Chicago, while possibly leading the world in this kind of work, is not alone, for the famous Dr. McLeod case of Boston revealed the fact that one group of five doctors performed more than seven thousand criminal abortions in that fair-famed city, in a single year. Other cities, and even smaller towns, for that matter, have their abortionists.

Shall such a record continue? Thousands of good physicians, and hundreds of thousands of good citizens say *NO*, and appealingly raise the Macedonian cry to all their American friends everywhere and especially to all the honorable physicians and surgeons of our land, who are by far in the majority, to morally assist in annihilating these vipers. In speaking thus, we are not unmindful of the terrible disgrace attached to many pregnancies. Nor are we unmindful of the many kind-hearted, loving women whose family burdens are greater than they can carry; nor of the rich or well-to-do woman who is seeking aid in the production of criminal abortion because of society functions or for other reasons.

Can we not help to stop the murdering onslaught by either appointing a committee, similar to the Chicago Medical Society Committee, which will act for us, or by a resolution that a clause similar to that suggested at the Philadelphia Jurisprudence Society be adopted? We need not all proceed alike, but all may help in their own special manner, some by constantly teaching its horrors; others, by consulting with our legislators, may have our laws improved. But we should not fail to aid in some way such a philanthropy, for the central idea of our Association is to cure. For as students of social economics we can easily observe that the idea behind such criminal organizations is wrong; that that idea, stripped of its essentials, is selfishness, to gain for self all that can be gained. Under such organizations, the men who have the greatest chance are those who are strong, cunning and unscrupulous, and he who has all three of these in greatest measure can take most for himself. So long as the world and its people are at the mercy of such organizations; so long as

selfish interests are the dominant ideals; just so long will crime and vice remain unchecked. Therefore, let us destroy the criminal abortionists; let us see to it that they are prosecuted and that neither small fines nor graft shall encourage the defendant to violations of the criminal law by esteeming their small penalty to be in the nature of a license to murder.

In America, we confine the definition of abortion to an interruption of pregnancy during the first three months of gestation, but abortion, by the German and French obstetricians, refers to an interruption of pregnancy before the period of viability, which is variously estimated as occurring any time between the twenty-fourth to the twenty-eighth week of gestation. Natural viability, however, even under favorable circumstances, is unlikely to follow an interrupted gestation earlier than the twenty-seventh or twenty-eighth week. Bodin has for years claimed that by artificial means he saves thirty per cent. of all cases of premature interruptions occurring during the twenty-fourth week of gestation, and this, I believe, is now done at nearly all modern maternities. Naturally a larger percentage under similar care, is saved during the twenty-fifth week, and increasing each week until term, or, rather, until and including the twenty-eighth week; for if we include to full term, a small reduction in percentage during the thirty-second, thirty-third, and thirty-fourth weeks may be noted, especially where incubation is not thoroughly understood, nor used.

Complete Abortion.—By this term we refer to those cases of pregnancy in which the fetus and its membranes are loosened from its uterine attachments and forced from the cavity of the uterus intact, passing away from the vagina much as would an ordinary blood clot, and often with but very little more pain or general disturbance; therefore, requiring very little, if any, either local or general care or attention other than rest for a short time to aid the involution of the uterus.

Incomplete Abortion.—As the word incomplete implies, this form differs from the foregoing in many ways. Here the fetus alone may suffer death and become severed from the umbilical cord by mechanical interference, either directly or indirectly, or it may possibly die from maternal anemia; it is then discharged, but a retention of all or a part of its membranes may take place, causing a mild, moderate, severe, or even fatal infection, either local or general, with or without hemorrhage, often resulting in

chronic pelvic disease, or even in an acute general peritonitis from which death follows; hence, this condition of affairs, unlike complete abortion, demands the most intelligent care and attention throughout the entire period of the disturbance, or, at least, until the uterus is entirely emptied of its contents, and often until that organ has completely involuted, if, indeed, it ever does return to a normal condition, for subinvolution is a common sequel even under the best management.

Concealed Abortion.—Here the embryo perishes but is retained, gradual atrophic changes taking place; the pregnant resilience of the enlarged soft uterus disappears, which now gradually decreases in size, all symptoms of pregnancy gradually passing away, leaving no appreciable ill effects.

Missed Abortion.—In this form the clinical phenomena of a threatened abortion are present, followed by those of a concealed or neglected abortion. The embryo dies, abortive pains occur, but the ovum remains in the uterus until removed. Neglected abortion resembles quite closely an incomplete abortion, but added thereto are those severe symptoms; first, of pelvic infection, followed very soon by a septic, general infection, and this often by general peritonitis and death.

Inevitable Abortion.—Here the diagnosis of abortion is made positive by discovering the cervix dilated; the ovum, which has become displaced from its attachment usually by severe hemorrhage, is found protruding from the os, or possibly a portion of the membranes may have been passed or the liquor amnii discharged.

Therapeutic induction of abortion, miscarriage, or premature labor is a justifiable procedure only when undertaken in the hope of saving the mother's life and if the fetus be viable, the child's life, but should not be attempted until competent consultation has been had, for frequently women are seen to whom abortion has been advised, who, frail indeed, suffering and vomiting even to the verge of starvation through the entire term of each pregnancy, go successfully to term, give birth to a healthy child, and after labor gain strength almost immediately. Therefore, before abortion is therapeutically induced for such conditions, for contracted pelvis or other malformation, or for threatened blindness of the mother, as was recently advised by Germann, to prevent leukoma, the advice of one or more well-informed obstetricians, if possible, should

be obtained. In some instances the advice of the Coroner's Physician or of the Health Commissioner's office may well be added, for with such a strong force of consultants, and with the consent of the parents and of the State, even legitimate destruction of the children, of the feeble-minded, or other hopeless incurables, unstabiles, or degenerates might while yet unborn be admissible, or at least be considered.

Again, in the matter of female pelvic deformities, occasionally general practitioners determine upon inducing abortion for pelvic contractions, without having a thorough knowledge of the use of the pelvimeter, or, indeed, of taking measurements of any kind; hence of themselves they are incapable of deciding such a momentous question. This naturally accounts for the induction of some abortions, miscarriages, or premature labors, because of so-called contracted pelves, which might easily have gone to term, as has been proven later by still larger-sized children being born to them with but very little trouble. This would account, also, for other cases that have been allowed to proceed to term where perhaps both mother and child might have been sacrificed because of pelvic malformations that ought to have been discovered.

Criminal abortions are attempts to empty the uterus for other than strictly medical reasons by the so-called friend, the sanitarium keeper, the midwife, or doctor, by introducing or attempting to introduce an instrument, such as a hairpin, a hatpin, a catheter, an electrode, or other surgical or unsurgical instruments, and often in such a filthy, slovenly manner that the mother's life also is sacrificed.

Pathology.—In a complete early abortion the ovum with the decidua vera usually passes away fairly completely, and yet quite often good-sized pieces of the decidua may remain and cause some slight septic fever before being expelled; indeed, they may be so tenaciously adherent to the uterine wall as to require removal by the intrauterine douche, the finger, the placental forceps, or even the curet. Most frequently in our experience in incomplete abortion the ovum descends, rupturing the reflexa, passing into the cervix or vagina, leaving the serotina, the vera and the reflexa to break up and gradually pass away, but very frequently requiring operative interference for their removal. Occasionally the fetus, with all its surrounding membranes, and with the liquor amnii, is expelled, leaving only the placenta to be removed.

Again, any combination of this or these, such as rupture of one or more of the membranes, may take place, but the principal modes of abortion which are likely to occur, are as above described.

Frequency.—What may be termed a standard statistic as to the frequency of abortion is very difficult to obtain, neither health board nor labor commission giving them accurately, if at all. If all were recorded, I am quite sure at least ten to fifteen per cent. of all pregnancies could be shown to be interrupted, and a great portion of these would come under the head of early abortions.² I herewith append the para-table of Clifton Edgar, of Cornell University, who made an exhaustive study of the premature interruption of pregnancy occurring among ten thousand cases of labor, treated in a dispensary service in New York in 1904. Among this group of cases, he found 635 premature interruptions—namely, 242 abortions; 175 miscarriages, or immature labors, and 218 premature labors, showing either an abortion, a miscarriage, or a premature labor once in every 15.7 labors, being only a little over 6 per cent.

PARA TABLE.

PARA	Abortion	Mis- carriages	Pre- mature Labor	Inter- rupted Preg- nancies	Full Term	Inter- rupted Full Term
Primipara.....	29	22	71	122	2,009	2,131
Pluripara.....	120	94	97	311	5,205	5,513
Multipara.....	79	49	46	174	2,047	2,221
Unknown.....	14	10	4	28	107	155
Total.....	242	175	218	635	9,365	10,000

He also found in the 635 cases a marked tendency for gestation to terminate in the third month, 23.91 per cent. occurring at that time; in the fourth, 11.18; in the fifth, 6.93; in the sixth, 6.15; in the seventh, 9.50; in the eighth, 12.63, and in the ninth, 12.25. These at present are the best arranged public statistics obtainable, and although not extensive as to numbers or time, they are surely not overdrawn, and I can imagine the enormous amount of labor and of time required in their preparation.

Etiology.—The causes of abortion may be divided into predisposing and immediate. Among the first of the predisposing causes to be mentioned is congenital or hereditary fetal syphilis, which may be conveyed by the father to both mother and fetus, or to either separately. If to the fetus alone, it is conveyed through an infected spermatozoa, for intercourse need not of

necessity always inoculate the mother; if not, she is the better enabled to ward off the ravages of this dread disease upon her nursing infant, should she give it birth. If the mother, however, be inoculated from a chancre or open ulcer, gummatous proliferation of the decidua takes place by the formation of a chronic inflammation, which involves the cells and villi of connective tissues, followed by a gradual closing of the vessels and a proliferation of their epithelial covering; the parenchyma of the villi becomes engorged with lymph; these dying villi crowd upon the blood sinuses, obliterating them, and for want of nourishment the fetus dies. The anemic fetal picture impressed by these syphilitic abortions, either before or after a placental formation, reminds one of the illustration by Schauta³ (in Lusk's obstetrics), showing fetal death by starvation, due to extreme torsion or knotting of the umbilical cord. A syphilitic fetus is, indeed, a skeleton-like framework, whose internal organs almost resemble its own dead-like placental tissue, which is an unhealthy, dark-looking, hard, conglomerate mass, devoid of all semblance of that life-giving structure observable in the normal, soft, spongy placental tissue, which is filled with an abundance of healthy bloodvessels, sinuses, and lacunæ, and which to be seen but once and thoroughly observed is to be remembered for life. The marked difference between these two, the syphilitic and the healthy placenta, both to the eye and the finger, need never be forgotten.

Other predisposing causes of abortion are the maternal drug habit, acting as a direct or an indirect poison; consanguineous marriages; obesity; rapid pregnancies; too free use of oxytocics; also maternal kidney insufficiency or other toxic conditions which may excite uterine irritability; prolonged hunger and thirst as in case of famines; tuberculosis; early youth or old age pregnancies, and the like. The immediate causes are injuries due to blows, kicks, falls, or accidents on steamboat, railroads, mountain, stage, or other rough road traveling, or, as before mentioned, by the introduction of instruments of various kinds into the uterine canal for the express purpose of fetal destruction.

Symptoms.—Any time before the fourth month the ovum may be discharged en masse or broken up with or without profuse hemorrhage, which may, especially during the first six or seven weeks, resemble an ordinary menstrual period, which often with but little pain carries away the ruptured or unruptured ovum.

Early "ovular abortions" usually occurring about the regular menstrual epoch differ entirely from later pregnant interruptions, as in them there is no first, second, and third stage, as there is from the third month on, these first, second, and third stages, becoming more and more pronounced each month thereafter until they resemble full term parturitions. There may be nausea, syncope, backache, and slight rigors; the vaginal secretions and micturition increase with nervousness, pain, and pallor, attended with intrapelvic pressure; later free hemorrhage occurs, and large clots may pass away.

During the immature or so-called miscarriage period the distinguishing clinical characteristics are the tendency to placental retention and adhesion; also a prolonged third stage, with profuse hemorrhage, the latter lasting many days, and often weeks, if not artificially terminated.

Diagnosis.—Aided by the personal history of the patient, the diagnostic points presented by Schickell⁴ of criminal abortion will be sufficient to arrive at a clear diagnosis of a criminal act. These are:

1. The presence of recent lacerations of the external genitals, the vagina or vaginal vault, the cervix, or the cervical canal of a pregnant woman, which appear to have been produced by pointed or sharp (rarely dull) instruments, providing operative procedures by a physician be excluded.

2. The discharge of the products without pain or hemorrhage, providing a coincident trauma may be excluded.

3. Injuries of the fetus, providing digital or instrumental therapeutic measures on the part of a midwife or physician may be excluded.

4. The appearance of a severe infection (apparently originating in the genitalia), during or immediately after an abortion, especially when it localizes or produces a rapid death, providing all other sources of infection are excluded.

The differential diagnosis of an abortion from a possible extra-uterine pregnancy, from hemorrhage due to interstitial and other fibroids (uterine polypoids, hemorrhagic metritis, or cervical cancer), and the differentiation of each of the many forms of abortion from the other, requires much space and therefore may for lack of time be passed for the present.

Prognosis.—As sequelæ to interrupted pregnancy, there is no doubt whatever that a tendency to recurrence and to the abor-

tion habit follows the initial case; also that functional diseases of the nervous system even to the extent of psychoses may be caused by even one abortion, and where the abortion habit exists this is not an uncommon sequel. But where cleanliness prevails and active interference is had as soon as necessary, no patient should die if properly cared for, yet carelessness or fear of detection is responsible for many deaths.

Treatment.—I have had in mind and have advocated for many years the suggestion of Schickell,⁴ who says the fact that very severe laws, both civic and spiritual, and occasional deaths have not diminished the number of criminal abortions, proves that the state should provide homes or asylums for the unfortunate single girls and their infants, and some means of maintenance of the children of the poor but overburdened parents; if this were done then poverty would not so often be an incentive to abortion.

In the active treatment of incomplete abortion, I find very strong and intelligent opposition against the use of the sharp curet, the pupils of Van de Warker, and Schroeder of Berlin being especially antagonistic to it. Personally, I do not support either its pernicious nor its promiscuous use in obstetrics, but follow more closely the practice of von Winckel, who interferes when the temperature begins to indicate a tendency to sepsis. I find the sharp instrument especially valuable in early abortions, when oftentimes it is exceedingly difficult, or even impossible, to dilate the os sufficiently to permit the free action of the finger or forceps. Active hemorrhage alone, without fever, can easily be overcome by the proper applications of the vaginal tampon, aiding its stimulating effect by the use of quinine, ergot, and the like, allowing the tampon, preferably of sterilized gauze, to be closely packed around the cervix, the vaginal vault, and thoroughly filling the vagina, to remain, if necessary, twenty-four hours. If upon its removal, the os is not sufficiently dilated to permit the easy discharge of the ovum and the decidua, as is usually the case, then the genitalia and vagina are again thoroughly cleansed and the vagina repacked. Upon withdrawing this last packing, the uterine contents are often expelled, or are easily removed by the fingers of one hand, assisted by expressing the uterus with the other hand through the abdominal wall. A third packing, however, should seldom be done; but now, even in the absence of fever, remove the contents of the uterus after

dilating the cervix under anesthesia, and by a free use, if necessary, of the sharp curet, cleaning away all debris from its attachment, usually following, especially if there be any septic tendency, with an application of either equal parts of tincture of iodine and glycerin, or of 95 per cent. carbolic acid and a copious intrauterine douche of one per cent. of lysol in sterilized water, comfortably warm, and occasionally following this by packing the uterine canal with iodoform or sterile gauze strips, as may be indicated. If there has been no fever, none follows this procedure. If there has been fever, it usually disappears immediately following this thorough curettage. The faults attributed to the sharp curet by those who deprecate its use are not always appreciable, for, I believe, the sharp instrument will, when properly used, take better hold of the decidua and pull upon it until it separates the membrane from the uterine line of demarcation, and with less damage to the natural surface of cleavage than will a blunt instrument; and by the sharp instrument one will recognize the well-known grating sound of the uterine wall quicker than he will with the blunt curet. Again, errors of judgment as to when the curet should be used are frequent, and for these the sharp instrument is not to blame. One should not wait until the uterus is saturated with sepsis, when each stroke of the curet will be positively harmful, and when even laparotomy will be an almost hopeless procedure in preventing general peritonitis; then it is not the tyro judgment and lack of dexterity but the intelligence and skill of experience, and the cooperation of a nurse imbued with the life-saving desire that is necessary.

The prevention of race suicide is one of the grand objects of American manhood and womanhood, and it will be accomplished by the concerted action of honest American physicians, when the American people acquire that sober thought and steadfastness of purpose necessary to the attainment of all great things.

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4118 STATE STREET.

DISCUSSION.

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, said, in reference to the management of cases of abortion, that when a woman was brought into the hospital with a history of mis-

carriage, one should decide then and there as to whether the uterine cavity was free from all products of conception. This should be known in order to prevent later the hemorrhages and sepsis which would surely follow if the case was treated in a so-called conservative manner. He claimed that it was radically wrong to let a uterus alone with the products of conception within it until one was forced to do something that might result seriously to the patient. The sooner the physician emptied the uterus, under aseptic precautions, when there were retained products of conception within it, the better it was for the patient. In the majority of cases he had no trouble whatsoever in taking a rather broad, curved dressing forceps and going into the uterus, taking hold of pieces of retained secundines, and removing them, thus cleaning the uterus out, following that with a dull curette, going over the uterus from the fundus down carefully, and making a thorough irrigation with normal saline solution.

TYPHOID PERFORATIONS.¹

BY

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Philadelphia.

I HAVE been presenting this subject in the shape of short discussions in county, State and national medical meetings for more than a quarter of a century. This has been done largely with the view of drawing out the opinions of general practitioners and impressing upon them the importance of prompt surgical interference. I have reported from time to time more than fifty operations for this condition, an average of two or three a year. Many members of this important organization have been interested in perforative forms of visceral disease. We profit greatly by free discussion of so important a subject, and welcome every note of surgical triumph over a calamity so fatal as typhoid perforations.

In the discussion of valuable contributions on this subject, too many surgeons admit their inexperience and criticise the clinician's tardiness or the failure of the physician to recognize the true nature of the lesion. It is lamentably true that we get these experiences accidentally, that we get but comparatively few timely opportunities. I have been asked four times while away from home to do work in prominent hospitals—to operate for typhoid perforation—three of the four cases having recovered.

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

The fourth was dead before she could be placed on the table. Here you have a demonstration of the vital importance of early recognition and early intervention. You are all familiar with typhoid fever and typhoid conditions; you are prepared to recognize the lesion early; it is a mistake to wait for desired symptoms; for instance, for the vanishing hepatic zone of dulness.

I regret that Dr. Hugh M. Taylor of Richmond, Virginia, is not here, as he was a pupil of the late Dr. Hunter McGuire, who for more than a quarter of a century recommended surgery for perforations and hemorrhages. Taylor, in a recent paper, says: "It would seem a settled fact that typhoid perforation is in every instance essentially a surgical complication, and equally so, certainly in the incipency of its existence, a legitimate field for operative intervention. There is nothing to justify the hope that recovery is possible through any resources other than those essentially surgical." Again: "The specialist in surgery appreciates what surgery can do and has done in the treatment of typhoid perforations. The general practitioner, into whose hands these cases commonly first fall, is not so well informed, and this society should express its convictions with no uncertain sound."

Exceptional instances are claimed of spontaneous recovery. The statistics of such cases are entirely too numerous. No matter how credible and honorable the authority, I have grave fears of a mistake. You may have ulceration and focalized peritonitis, but not perforation. Keep in mind that perforation kills. For very much of the reported mortality diagnosis is at fault. The good practitioner and good nurse should not overlook this accident in a typhoid running a perfectly uniform course. Nearly all the perforations are found within about the first twelve inches of the ileum. Characteristic symptoms of perforation are now well known.

Typhoid, and indeed other perforations, are always followed by peritonitis, local or general. The possibility of its remaining local or circumscribed by adhesions should not be considered if the diagnosis of perforation has been made. Perforation and hemorrhage are the two accidents in such a case that are commonly anticipated. In more than 75 per cent. of the cases recorded general septic peritonitis has been found with escaping bowel contents, gas and feces, foul pus, and free exudate in considerable quantity. Generally the perforations are easily and quickly found near the ileocecal valve, rarely multiple or ragged. Whether of large or small caliber, fine, pure silk is the safest ma-

terial to suture the openings. We can safely reduce the lumen of the bowel to half its normal caliber in this kind of surgery.

If the margins of the ulcer are ragged they should be trimmed. A resection here is an unjustifiable and dangerous procedure. It is better to anchor the ragged ulcer and disorganized bowel with catgut sutures in the opening between drains, thus forming an artificial anus or fecal fistula, which is a much safer procedure, and is commonly followed by spontaneous closure. If this result does not follow, the fistula can be easily remedied after convalescence. I prefer the wet or wash toilet. I am satisfied my practice has influenced a number of surgeons to use it with results that they could not have secured, no matter what their experience, by the dry toilet. The dictum formulated by McMurtry is very commonly and successfully followed: "Early section, repair, irrigation, and drainage."

Dr. J. M. T. Finney, in his excellent paper on "Surgical Treatment of Typhoid Ulcer," in discussing the relative merits of irrigation and drainage, says: "The facts stated that in 17 of the 23 cases that terminated in recovery, irrigation of the peritoneal cavity was employed, speaks strongly for the efficacy of this measure. In but eight cases of the entire number was wiping used, two of which terminated in recovery." The irrigation or wash toilet, so long practised, has unquestionably given the best results. It should be a thorough cleansing with sterilized water of the entire surface, both of the visceral and parietal peritoneum. It is my impression that irrigation with hot, normal, salt solutions is harmful because of irritation.

It is difficult to cleanse satisfactorily a dirty peritoneal cavity, and, after making an earnest effort to do so, we place multiple drains or practise the open method, which has given us the best results. The gauze pack, often so recklessly used, is a dangerous procedure, favoring too many acute and chronic obstructions by pressure. Unless the operator understands how to place gauze drains or coffer dams in and about filthy surfaces, he had better fill the peritoneal cavity with hot salt solution and close. More obstructions will follow the use of normal salt solutions than distilled or sterilized water. But sterilized water will not arrest general septic peritonitis as quickly as salt solution. Gauze is a rapid method of drainage, but is open to the objections already named.

After closure of a perforation, with careful toilet and drainage, I have noticed that about all the alarming symptoms vanished,

the temperature falling to about normal. So pleasing was the condition of the first two or three patients, I was influenced to counsel that the drains be let alone—simply to change the outside gauze dressings. The drains were allowed to remain as long as six days without a temperature, the thermometer going up immediately upon the removal of the drainage. It is fortunate that the internist recognizes the worthlessness of ice, rest, and opium in perforations and peritonitis. Perforations are commonly overlooked in walking cases of typhoid. This is explained by failure to carefully differentiate or too hastily jumping at a diagnosis of appendicitis.

We find that appendicitis is most common during a typhoid epidemic. Again Taylor sounds the right note when he says: "All cases ought to be operated on; not only those *in extremis*, but even those that are convalescent and in a better condition. I can hardly conceive of a case in which a surgeon would be justified in declining to operate if the patient is convalescing and in good condition for the operation. I think all cases ought to be operated upon, because, as Gregg Smith says, 'who can tell with absolute certainty that the patient is in a moribund condition, inevitably doomed to die, when there is a bare possibility that life may be saved by operation? It is beyond the power of man to say that a patient is hopelessly doomed because of hemorrhage.'"

The repeated plea or excuse for not operating is low vitality, weakened condition, extreme emaciation. Successful operations have been done in the midst of low, alarming typhoid and abdominal conditions, general incontinence, muttering delirium, and subsultus. Our triumphs following or for the repair of mutilations are now so numerous and gratifying that the schooled surgeon should fear nothing.

241 NORTH EIGHTEENTH STREET.

DISCUSSION.

DR. ROBERT T. MORRIS of New York said that the idea of draining the toxins in cases of extreme, profound toxemia, with subsultus, and muttering delirium, was an epoch-making observation. He thought this idea was new.

DR. HERMAN E. HAYD of Buffalo said that this was the first time he had ever heard enunciated a proposition that surgeons should make abdominal drainage in very low cases of typhoid fever in advance of perforation, with subsultus, low muttering delirium, and the usual features observed with a low typhoid con-

dition. Moreover, the surgeon was stimulated to operate oftener in cases of perforation. Sometimes it was difficult to make that diagnosis, particularly if the patient had a low, muttering delirium. It was not easy to diagnose typhoid perforation. A few weeks ago a young surgeon asked him to see a patient in consultation in the German Hospital, Buffalo. The man had low, muttering delirium. Suddenly his temperature and pulse arose, and the speaker thought there was a typhoid perforation. In view of the fact that a colleague had had a case of perforation of the bowel in the Woman's Hospital, surgeons were ready to operate in cases of typhoid fever perforation. He told this young surgeon that he did not believe there was perforation, for the reason that there was no sweating, no collapse to indicate that perforation had taken place. From the general appearance of the patient he could not make up his mind that this delirium was associated with typhoid perforation. Accordingly, he refused to operate on the man. Two days afterwards, however, he died. A post-mortem examination was made, but no perforation found. The patient died simply from an intense toxemia. After listening to Dr. Price's paper, this man might have recovered if his abdomen had been opened and the abdominal cavity drained.

DR. C. C. FREDERICK of Buffalo was very glad to hear Dr. Price recommend drainage in severe cases of typhoid fever, even when there was no perforation. It appealed to him as having in it the elements of success, as in the teaching of Dr. Pryor in cases of puerperal sepsis. Dr. Pryor of New York had treated a great many cases of severe puerperal sepsis by opening Douglas' pouch and packing the pelvis with iodoform gauze, therefore establishing free drainage and saving his patients. The speaker had done this several times in severe cases, with good results, but without which he feared they would have died. This was now a uniform practice with him in such cases.

DR. JOHN A. LYONS of Chicago reported a case in which he believed perforation had taken place. Dr. George W. Webster of Chicago, who saw the patient in consultation, advised the use of 4 per cent. gelatine solution. He administered this solution internally and freely, and, much to his surprise, the patient recovered.

DR. CHARLES L. BONIFIELD of Cincinnati said that his experience had been limited to two cases. One patient was very far advanced in typhoid fever, having had an exceedingly severe attack, but was poorly treated. He did not believe there was a fair chance in her case. An operation was done, but while it did not shorten her life, it failed to save it. This case occurred two or three years ago. A second case he had about a year ago. In this case a brilliant internist was called in consultation twelve hours after perforation had occurred, so far as they could judge from the symptoms. The internist immediately recognized perforation and telephoned for Dr. Bonifield to come to the house prepared to operate. As soon as he could get his assistants, nurse,

dressings, etc., he went to the house, which was in one of the suburbs, and proceeded to do an abdominal section. The perforation was the size of a lead pencil. When he lifted the coil of intestine in which the perforation was situated, feces poured out in a large stream, and contaminated the peritoneal cavity. This was washed out and free drainage established. The patient improved very much within a few hours, and gradually went on to recovery. There was the complication of a second perforation which occurred in the drainage tract a little later. There was leakage from another perforation through the drainage tract for possibly a week. This closed of itself, and the patient eventually made a good recovery. He thought it was better to open the abdomen of a half dozen cases of bad typhoid, where there was no perforation, than to fail to open one where there was at the proper time, and he believed that many of these patients would be benefited by the drainage even though no perforation was found.

DR. WILLIAM H. HUMISTON of Cleveland, O., said there had been two cases of typhoid perforations in St. Vincent's Hospital in the last two years, which had been operated on by general surgeons, and both recovered. In typhoid cases where there was a low, depressed, suppurative, or septic condition, the operation should be a short one and done as quickly as possible. The vitality in these cases was low. He believed that these patients could be taken from the table in a better condition than when they were put on by beginning with submammary injections of normal salt solution, and continuing this until at least a quart was put in each breast. He had had experience with this method, and knew it to be a good one.

DR. E. GUSTAV ZINKE of Cincinnati had had but one case of typhoid perforation, and that terminated fatally. It was not only important to make an early diagnosis and to operate promptly in these cases, but what was of still greater importance was a large, free incision. He had witnessed several operations for typhoid perforations, in which the operators made but a small incision, in consequence of which they had much trouble in finding the perforations.

DR. ROLAND E. SKEEL of Cleveland said that his experience in cases of typhoid perforation had been limited to two instances. Both of them were seen late, and both died. Before the dictum of the Association went out that typhoid fever, attended with great toxemia, was relieved by surgical interference and drainage without perforation, he thought it was due Dr. Price to state on what grounds he based the pathology, whether he based his conclusions upon the accepted pathology of typhoid, such as the presence of the bacillus typhosus in the blood, in the spleen, the kidneys, and the liver. The intestinal tract was one of the last of the organs to be involved in typhoid fever.

DR. ALBERT VANDER VEER of Albany, N. Y., said that this very classical paper would attract the attention of surgeons and would undoubtedly be read by the middle-aged and younger

members of the profession. As the previous speaker had said, Dr. Price should say something more in reference to drainage in cases of typhoid. In the autopsies he had been able to see, where he had been called in cases of perforation from typhoid fever, with the patients moribund at the time they were seen, he had found two or three hours afterwards in the pelvis in almost all of these patients from one to four ounces of a serous fluid that was saturated with typhoid bacilli. He thought an effort should be made to operate on some of these cases. Had Dr. Hayd's case been operated on, the patient might have been saved by washing out and establishing drainage after the manner described by the essayist.

DR. JAMES F. W. ROSS of Toronto said that all surgeons were agreed, he thought, that in cases of intestinal perforation from typhoid or from other causes, and in perforations of the stomach and of the appendix, operation at as early a date as possible was the correct procedure. In listening to the paper he did not read between the lines as some of the other speakers evidently had done, that is, Dr. Price recommended as a matter of routine that surgeons should operate in cases of typhoid fever and drain the abdominal cavity. He understood him to say that in cases in which it had been done it did not do any harm. For his own part, he thought it was a misfortune to make an incorrect diagnosis and operate on a patient in as low a state as these patients were in typhoid fever, with the idea of finding a perforation, and then finding a mistake had been made. Twice last winter that happened in a hospital with which he was connected, and with two fatal results. While he thought surgeons should always operate if perforation in typhoid fever had occurred, still they should try and make an accurate diagnosis. True, occasionally mistakes would be made, but he did not believe that it was good practice to operate on cases of typhoid fever in the absence of perforation. Speaking of drainage, he preferred the gauze drain. He did not believe in multiple drains.

DR. RALEIGH R. HUGGINS of Pittsburg said the diagnosis of perforation in typhoid was not readily made, but at times an increasing leucocytosis would enable one to diagnosticate a typhoid perforation where he could not otherwise do so. All were agreed as to the advisability of rapidity of operation, but if we were going to irrigate the abdominal cavity freely, we certainly should not utilize an unnecessary amount of time in so doing. He believed that in perforations from typhoid fever irrigation was unnecessary, and that time could be saved by making a free incision and placing two or three cigarette drains.

In the after-treatment he emphasized the Fowler position, and the free use of salt solution per rectum according to Murphy's method.

DR. JAMES E. SADLER of Poughkeepsie, N. Y., cited two cases of extreme typhoid fever, one occurring about five years ago. She had the symptoms of perforation, although they were not well-

defined. He operated upon her, and, following the advice suggested, he began with saline transfusion at the time he commenced the operation. The perforation was found; the area was walled off after the method described by the essayist, and the patient went on for weeks at the verge of death, but later began to improve, and from that time on made an uneventful recovery. During the past winter a similar case came under his care. In this there were also evidences of a possible perforation. The fact that he was not fortified by an absolute diagnosis of perforation prevented and militated against an operation. That patient died. Had he been fortified the past winter with the paper of Dr. Price he should have operated on this second case, perhaps with as fortunate a result as he obtained in the first.

DR. RUFUS B. HALL of Cincinnati said that this paper would certainly attract wide attention, and would revolutionize, in a measure, surgery in typhoid fever. If he understood the essayist rightly, he did not recommend operating on every case of typhoid fever, as was implied by some of the remarks that had been made, but simply in the severe cases attended with subsultus and low muttering delirium. It was exceedingly difficult to make a positive diagnosis early of perforation in typhoid fever, even when it was present. He did not know that he was right in advocating drainage in those cases in which there was not a history of perforation in typhoid fever, particularly where the condition of the patient was desperate; and yet, from a surgical standpoint, he did not see how the patient's chances for living could be lessened by so doing, and probably her chances would be more favorable by operation.

DR. HUGO O. PANTZER of Indianapolis made a brief allusion to two cases of preperforative gangrenous appendicitis, probably of typhoid origin. One of the patients was a high school girl, and the other a boy of twelve. In the girl's case opening of the abdomen disclosed a very large, edematous, pale appendix, with the circulation of the mesenterium so much interfered with that there was no hemorrhage from it. The appendix was removed, and closure of the abdomen was followed by an immediate decline in temperature, although it had been as high as 104.5° , with high pulse. The temperature declined to 99° after the operation, and the pulse went down to about 100. The sensorium was clear. The girl died at about the tenth day from typhoid fever. The boy made a tedious recovery, and in turn developed a pulmonary lesion. Both cases showed that there was a large, edematous appendix, with an impending necrosis of the mesenterium, but at this stage there was no serum in the cavity. The question naturally arose, after listening to Dr. Price's paper and argument, whether the speaker could not have done better in each case if he had put in a large drain, expecting that this might have had some influence on the typhoid intoxication. He thought the treatment would particularly apply to those cases in which there

was grave and extensive involvement of the mesentery of the intestine.

DR. PRICE, in closing the discussion, said the suggestion of Dr. Morris as to the importance of seeking toxic foci and of arresting the toxemia was excellent. It would seem that the results from surgical intervention had been better than he had anticipated. Dr. Bonifield had anticipated him in much of this work by the recital of his cases. The results from operations for typhoid perforations throughout the country had been very good. At the Hopkins, after permitting twenty-seven or thirty patients to die from typhoid perforation without operation, the surgeons there operated on four patients and saved three. They waited two days to make a diagnosis; they waited for the hepatic zone of dullness to disappear before they did the first section. He was satisfied that had they done the first section as early as they did the other three, the results would have been the same and they could have saved one hundred per cent. Few surgeons had sufficient courage to insist on operation in these cases.

The question of shock should always be considered, and Dr. Humiston had adopted the wise precaution of preparing his patient for shock and for unfavorable conditions following prolonged anesthesia or prolonged operation. The early use of normal salt solution was valuable. A surgeon could put a typhoid patient on the operating table with a pulse of 140 or 160, and if he took the precaution to have a short anesthesia and perform a rapid operation, if the incision was made through non-vital structures that did not produce much shock, the patient would come off the table with a pulse of 130 and in much better condition than when he went on. Practitioners should strive to minimize harmful conditions in their surgical work. Like amebic dysentery, the seat of the trouble in typhoid cases was in the ileum and Peyer's patches. In fact, it was in Peyer's patches that the disease lurked, and the systemic infection, the headache, etc., came from that source, and if under such conditions all agreed that a patient was going to die he would not hesitate, even though unable to find a perforation of the bowel, to drain the bowel and irrigate it, as was done in cases of amebic dysentery. He believed that surgeons could get as good results in some cases of severe typhoid from drainage as were now obtained in amebic dysentery.

While he was fond of salt solution, because it was more stimulating than other agents, yet, as a matter of fact, more cases of ileus (post-operative) followed it than from the use of sterilized or distilled water.

He mentioned an army surgeon who had operated on four cases of typhoid perforation, and saved three, and he recommended that in unhealthy conditions, not favorable for suture of the bowel, that the intestine be brought out and the ulcerated zone thoroughly drained; that is, anchor the bowel between gauze sponges with catgut, and through an artificial fistula drain the bowel and the

peritoneal cavity. After the catgut was absorbed, this fistula would close, or the surgeon could close it during the convalescence of the patient.

APPARATUS FOR RECTAL SALINE IRRIGATIONS.

DR. O. H. ELBRECHT of St. Louis, Mo., exhibited an apparatus for the application of Dr. Murphy's continuous rectal saline irrigations in private homes.

WHEN SHALL WE PERFORM MYOMECTOMY AND WHEN HYSTERECTOMY IN UTERINE FIBROMYOMATA?¹

BY

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NEW YORK.

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I HAVE been somewhat surprised and disturbed during my attendance at medical societies and through the perusal of current literature, to observe an effort to force upon the profession at large the most radical views regarding the evils proceeding from the presence of uterine fibromyomata and their removal as soon as discovered. If all those who have carefully and extensively examined into this subject had reached the same or approximately the same conclusions, even if I held contrary views modesty would forbid me to express them and I should remain silent. But we find that Noble, of whose scientific attainments and humanity we feel proud as Americans, after a careful analysis of his own and a vast number of the cases of others reaches the conclusion that in nearly all cases radical operation should be performed as soon as expediency will permit after the discovery of the tumor, and in keeping with this view in his extensive operative experience up to the time of the publication of his paper in the *Journal of the American Medical Association* last winter, that he had performed only twenty-two abdominal myomectomies, while the author, in a much more limited experience, has performed thirty-one.

On the other hand, we see Winter of Berlin, who has written a paper, recently published, in which he gives a study of 753 cases

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

of uterine fibromyomata in his own practice (one of the most valuable and scientific contributions which has ever been made on this subject), reached a diametrically opposite conclusion and speaks with scorn of the surgeon who would operate on a fibroid tumor for no other reason than that of its mere presence. The facts which Dr. Noble¹ has presented in his great paper are indisputable, and it is a contribution of the greatest scientific value, but I take issue with his deductions, with his interpretations and with the assumptions upon which he promulgates his law of procedure.

Noble assumes that a certain given percentage of patients would have died of the tumors alone. This we all agree to. He assumes that a certain percentage would have died of complications, among which as causes of certain death are mentioned pyosalpinx and ovarian cysts, these forming a considerable percentage of the complications which if left unoperated upon would have caused death. This assumption we cannot entirely agree to, for many cases of pyosalpinx do not cause death. In some cases the pus becomes innocuous or finds a natural exit. All cases of ovarian cyst do not cause death; many are mere retention cysts and do not at all tend to death. But leaving the correctness of these assumptions entirely aside, we know that a certain per cent. of the cases would die of the tumors and an added percentage of complications; does it then follow that we should operate radically on all or nearly all cases? By no means can such a conclusion be drawn from the facts now at our disposal. We must all agree that those cases which would otherwise have caused death or chronic invalidism should be operated upon. But this does not concern the vast majority of all cases which never reach such a stage, which cause no danger, and which have no complications. The general law made for the bad cases and the complicated cases should not be made to operate in benign cases and uncomplicated ones unless it can be shown that these cases become virulent and complicated. This, however, we all know is not true.

In order to establish this statement I herewith present the following facts: Ellice McDonald, in 175 miscellaneous autopsies held upon women, found that in those over 20 years old about one in every seven, or nearly 14 per cent., had fibromyomata. Now, if those who hold to this simple and easy rule, to operate on every fibroid as soon as discovered, could have their way, 14 per cent. of our female population over 20 years of age would be operated

upon for fibroid tumors. This would for a time make abundant work for those who hold this view, and no doubt they would have a very small average death rate in their operations, but one which in the average would far exceed the natural death rate of fibroid tumors when allowed to run their natural course, and they would hear in no uncertain way from an outraged public as soon as that public became aware of what was going on. I have the strongest clinical evidence that by far the greater portion of these tumors do little or no harm.

An examination of 200 consecutive gynecological cases appearing in my office showed that 24, or 12 per cent., had fibroid tumors of various sizes. Of these 24 cases 8, that is, one-third, were advised to have radical operation—six to have hysterectomy and two myomectomy; of the remaining 16, or two-thirds of all the cases, two were advised to have curettage. The remaining 14, or more than one-half of all the cases, were advised, some to report occasionally for examination and some to report only in case anything unusual developed. I shall now present a brief outline of a few of these cases of fibromyoma of the uterus who have consulted me and have not been advised to have any radical operation.

CASE I.—Mrs. A. B. has been under my care for nine years. When she presented she was 23 years old, had been married six months. She was regular; periods lasted from six to seven days and she flowed freely and suffered much pain in the lumbosacral region, and some pain and sensation of weight in the pelvis on exertion between the periods. Diagnosis: Uterus retroverted with two small fibroids the size of an English walnut on the anterior wall of the uterus at the vesicouterine reflection of the peritoneum.

She was given local treatment for about a week when the uterus was replaced and a pessary was introduced. The uterus remained in place and symptoms were much relieved. Up to date this patient has had three miscarriages and borne two healthy children which are both living, the elder being now six years old. The pessary was not necessary after the birth of the older child, as the uterus remained in place without it. A recent examination shows only the faintest trace of fibroids.

CASE II.—Mrs. C. has been under my care for three years. At that time the history was negative up to the beginning of present disturbance. When she presented herself she stated that she did so at the urgent request of a medical friend not, however, her

physician, and that she had a private room engaged at a hospital and expected to enter there the next day for a hysterectomy for fibroid tumor of the uterus, which she had been informed was undergoing cystic degeneration and urgently needed operation. She felt perfectly well, but for seven months had been quite irregular, having skipped several periods. For three months she had noticed rapid enlargement of the abdomen. Examination showed a seven months' pregnancy with living fetus, and a small fibroid tumor the size of a small orange on the upper right anterior segment of the uterus. Patient was informed of her condition and was with some difficulty persuaded not to go to the hospital. Two months later I attended her in confinement; a very large baby was born dead. March 5, 1907, I delivered her of a large, healthy boy baby. At a recent examination I could find no trace of the tumor and both mother and child are in most vigorous health.

CASE III.—Mrs. W. H., age 43. Married six years; never pregnant. Consulted me on account of excessive and painful flowing. Diagnosis. Three uterine fibroids ranging in size from a hen's egg to a small orange. Curettage advised. Examination one year later shows fibroids growing slightly, but periods have been regular and there has been no return of excessive flowing. Patient is being kept under observation.

CASE IV.—Mrs. A. M., age 47. Had menopause one year ago. Married twenty-two years. Never pregnant. Had fibroid tumor removed by Dr. Polk by vagina, five years ago. Consulted me on account of excessive vaginal discharge. Examination. Uterus is the seat of several small, atrophied fibroids. Senile vaginitis. Treatment. Antiseptic douches and applications of nitrate of silver. After two months. No vaginal discharge. Patient perfectly well.

CASE V.—Mrs. P., age 40. Married twenty years. No children; one pregnancy nineteen years ago. Periods have always been regular; of recent years flows rather freely for three days; slight pain. Examination shows the uterus to be retroverted and the seat of several fibroids. The patient looks robust, feels strong and well and does not desire to bear children on account of her age. No operation advised.

CASE VI.—Mrs. M. C., age 25. Married four years; one child three years old. Instrumental labor. Regular, flows three days, slight pain; feels as though something was coming down in the vagina when she walks. Diagnosis. Small fibroid on anterior

wall of uterus; lacerated cervix and perineum. Operation for repair of lacerations advised.

CASE VII.—Mrs. L. H., age 39. Married sixteen years; two children, last one fourteen years ago. Periods regular for the past four years; flow has lasted seven days and has been quite free. Periods ceased five months ago. Has some pain in lower right side of abdomen. Considerable leucorrhea. Diagnosis. Pregnant five months. Several small fibroids on the uterus; some as large as hens' eggs. No operation advised.

CASE VIII.—Mrs. S. T. Has been complaining six months; periods regular, twenty-eight days' interval; flows moderately; no pain. Consults me because she thinks she has appendicitis. No definite history of attack. Shows slight tenderness over the appendix. Small uterine fibroid. Advised to keep under observation.

CASE IX.—Mrs. H. G., age 32. Married twelve years; never pregnant. Six years ago was curetted for menorrhagia; has been well and regular since until two weeks ago, when she began to flow, passing some clots. Diagnosis. Small uterine fibroid the size of an orange. Curettage advised.

I will not present more cases. The foregoing represents fairly the type in which no operation or only a palliative one is suggested, and represents about two-thirds of the cases having fibroids in my practice, not, however, taking into consideration cases referred to the hospital on account of fibroids, some of whom have mild symptoms and some absolutely none at all. I cannot pass from these cases without especially mentioning the quite considerable class where there are absolutely no symptoms. In this class fall some of the cases where I advise radical operation on account of size or rapid growth. In favor of the radical operation on all fibroids the exceedingly shallow argument is sometimes advanced that a patient never consults you unless she has symptoms. I have wondered if those who use this line of argument have never discovered a fibroid while making a general examination or examining a pregnant woman, or one who has just borne a child.

In about one-third of my cases I find that I recommend a radical operation, this being hysterectomy or myomectomy. When shall we perform myomectomy? In the thirty-one abdominal myomectomies which I have performed there have been two deaths ($6\frac{1}{2}$ per cent.) and four of the patients have become pregnant. Tak-

ing an equal number of consecutive cases of fibroids treated by hysterectomy, I find that there have been no deaths. For the purpose of this comparison I have looked up my records at the Post-Graduate Hospital for three years past and find that during that time I did thirty-four hysterectomies with no deaths and adding to these six done in other places, it makes forty consecutive hysterectomies in three years with no death. These represent the worst cases from those who have come under my very care and all presented symptoms which, according to my standard, demanded operation. In one case the chief indication was pain caused by the pressure of the tumor upon the ribs, yet this woman otherwise was quite well. I have not chosen here to present all of my hysterectomy cases, but only taking them as they came consecutively for three years, to compare them with approximately the same number of abdominal myomectomies, and this shows that as a general proposition myomectomy is much the more dangerous operation.

My average mortality, then, in myomectomy is greater than in hysterectomy, but I believe that with the more extended experience myomectomy will show a lessened mortality in my hands, because I have learned with a reasonable degree of certainty what cases may safely have myomectomy, and as my experience has accumulated I feel that the limits of myomectomy have become narrowed. One of my early cases in which the operation was undertaken to relieve sterility was of such a character as to greatly excite my enthusiasm for the operation. From this woman, operating by the abdominal route, I removed sixteen tumors through nine incisions. The patient made an easy and uncomplicated recovery and bore a healthy boy without any complications. He is now a sturdy little lad of six years. A more extended experience has taught me that this operation has its limits and that these are comparatively narrow; but it is an operation of extreme importance and beneficence to those for whom it is suited.

In the first place, we need consider myomectomy as a proper procedure only in those cases where child-bearing is desirable and is prevented or interfered with by the presence of a neoplasm, except in those cases of pedunculated tumors either into the peritoneum, uterus, or vagina, where tying off the pedicle would be simpler and safer than removing the uterus. In not all pedunculated tumors is this the case. Where there is a large tumor grow-

ing up into the abdomen from a pedicle more than an inch in diameter, I should prefer to do hysterectomy, except where pregnancy is to be considered. Then, with this restriction, let us consider what cases may come within the range of safety, size of tumors, location, character and number.

Those cases, which form a considerable majority of my whole series, where the tumors have been small, ranging from the size of a hen's egg down and located chiefly subperitoneally or much nearer to the peritoneum than to the endometrium, have all recovered and have given me but little uneasiness. Two cases, in one of which the tumor was single, interstitial, and about five inches in diameter, and the other in which there were two small subperitoneal tumors and one interstitial, one about four inches in diameter, had very stormy recoveries and gave me great uneasiness.

The two cases which died had respectively three and five tumors which were so situated that the endometrium was much injured, and although repaired with catgut and the beds of the tumors carefully obliterated with continuous catgut sutures, yet both died of sepsis. Two other cases I desire to mention which were, of course, not in the list of myomectomies. One was a beautiful young woman, 27 years old, who had been married only three months. She had been flowing almost continuously since the time of marriage. Examination showed the presence of a fibroid about three inches in diameter in the anterior wall. I advised that a myomectomy be at once performed. The tumor was found to be interstitial and its situation was such as to necessitate the dissection of the bladder from over it. The enucleation proved very difficult. It was difficult to shell the tumor out from its bed, and finally a considerable sized piece of endometrium came with it. The former sad experience of losing two cases which had presented much the same physical characteristics decided me to complete the operation by removing the uterus. Prof. Brooks, pathologist of the Post-Graduate Hospital, found the tumor to be a sarcoma, but with no degeneration.

The second case was that of a woman about 40 years old, upon whom I had operated four years previously for an old salpingitis, doing a plastic operation on both tubes for sterility. She was brought to me in March, 1907, on account of symptoms of extra-uterine pregnancy. She had been flowing continuously for six weeks, following a skipping of one period. Examination showed a mass a little larger than a hen's egg in the right horn of the

uterus. Operation was performed by me at the Woman's Hospital. Both tubes were entirely closed and impervious, and their ends covered over with dense adhesions. The mass in the horn appeared to be a fibroid tumor. I could not shell it out, so removed the uterus with it, leaving the ovaries buried in a mass of adhesions. The pathologist reports it to be *adenoma fibroma benignum*. This patient had suffered no pain.

Finally, however desirable it may be to retain the uterus for the purpose of child bearing, and where its size may not be great, yet myomectomy cannot be thought of, are those cases where there are a great number of small nodules scattered throughout the substance of the uterus or where the uterus is uniformly degenerated into a myomatous growth. When such uteri have reached a depth of six inches or more and are continuing to grow, if symptoms demand interference this can only be in the form of a hysterectomy. If radical interference is necessary, hysterectomy I believe should be done in all cases where the question of child bearing is not involved and the tumor is not an easily removed pedunculated one. I perform complete hysterectomy with removal of the ovaries where the character and rapidity of the growth suggest malignancy; in others supravaginal, leaving the ovaries when healthy in patients who have not reached the menopause and removing them in those who have passed it.

Then I take as general indications for radical operation, that is, hysterectomy or myomectomy, the following:

Great size.—Causing visceral changes, exhaustion, and inconvenience.

Rapid growth or pain and hemorrhages.—Indicating that the tumor may be malignant.

Pressure upon ureter, bladder, rectum, or intestine.—Interfering with the functions of these structures.

Hemorrhage.—Which cannot be controlled except by radical operation.

Interference with labor.—As in the case of a tumor so situated in a pregnant uterus as to make normal labor impossible.

Causing sterility.—As when a tumor causes repeated abortions or prevents fecundation.

Pedunculated tumors, or indications of necrosis.

Various complications may exist in coincidence with the tumor which, taken together with it, will prove sufficient indication for operation.

I present herewith some reports and observations on this subject which have been recently published and which I think are valuable contributions.

Winter²: *Die wissenschaftliche Begründung der Indicationen zur Myomoperationen*. "Before all, the indications for myoma operations need a safer and broader foundation." Those operators who regard the mere presence of a myoma as a sufficient indication for its removal indeed are relieved of the trouble of a scientific foundation for their action; fortunately there are few such in Germany."

In a careful analysis of 753 cases he made the following most interesting and instructive observations: Before the menopause abnormal bleeding occurred in 65 per cent. of the cases; after the menopause, in 2 per cent.; *i.e.*, in 16 cases out of 753. In these sixteen cases there were:

"Carcinoma of the body	4 times.
Sarcomatous degeneration	2 "
Gangrene of the tumor	2 "
Fibrous polypus	3 "
Cyst of the ovary	1 time.
No special cause	4 times.

In one-third of the cases of hemorrhage in fibroids after the menopause there was malignant disease."

"Metrorrhagia in 12 per cent. of the cases in which it occurs was caused by malignant disease, and in 50 per cent. by submucous fibroids. Hence the great importance of metrorrhagia as a symptom and the necessity of proceeding against these cases radically."

"Submucous fibroids undergo sarcomatous degeneration in 8-10 per cent. of cases and lead most frequently to the severe forms of anemia. Hemorrhage may be relieved most satisfactorily in subperitoneal fibroids, also in interstitial when the canal is not too tortuous; in submucous never."

"Out of the whole number of 753 cases of myoma, 204 were operated on chiefly on account of hemorrhage. Of these

Vaginal conservative operations were performed...61 times.

Total vaginal extirpation46 "

Supravaginal hysterectomy97 "

Seventy-five per cent of all the cases operated on had suffered pain, and in 33 per cent. of the cases operated on pain was the chief indication."

"An absolute indication for operation is the occurrence of bleeding and pain in a fibroid after the menopause. In 50 per cent. of the cases of necrosis of the tumor a more or less severe intermittent pain occurred."

In regard to heart cases, Winter finds them to be quite rare except those due to anemia.

In 60 per cent. of his cases the heart tone and sounds were perfectly normal. In 30 per cent. there were murmurs which were interpreted as follows:

Caused by anemia	52 times
Caused by apparent anemia.....	16 times
Arteriosclerosis	6 times
Neurasthenia	2 times
Fatty degeneration	2 times
Dilatation and hypertrophy, not including valvular lesions, 3 times.....	1%
Valvular lesions, 3 times.....	1%
Changes in the myocardium, 3 times.....	1%

He does not advise operating on a tumor either on account of large size or rapid growth unless symptoms be present; nor yet the fear that symptoms may set in. He considers that after the symptoms set in there is ample time to operate.

Dr. Karl Fleischmann (3) in the preceding eight years operated on uterine fibromyomata in 130 cases; 73 cases were operated on by the abdominal route; 65 of these had supravaginal hysterectomy with 3 deaths; that is:

Four times total hysterectomy, 1 death.

One supravaginal amputation with extraperitoneal treatment of stump.

Three times myomectomy of subserous myomata.

All recovered.

The total death rate in the 73 cases operated on by the abdominal route was 5.47 per cent.

By vaginal route, 57 cases.

Total extirpation, 50; all recovered.

Total extirpation begun by vaginal, ended by abdominal route, 3; one death.

Enucleation with retention of uterus, 4 cases; all recovered.

Total death rate by the vaginal route was then 1.75 per cent., a mortality in the entire 130 cases of 3.84 per cent.

Of the abdominal cases which died, one died of pulmonary em-

bolism, one of secondary hemorrhage, one of heart degeneration, and one of sepsis which had been complicated by pyosalpinx.

"According to my opinion, when one has a patient with a bad heart and an excessive anemia from frequent hemorrhages, he should choose the operation of shortest duration."

The following complications were observed:

Sarcomatous degeneration, 5 times.....	3.1%
Necrosis and gangrene, 8 times.....	6 %
Extensive calcification	Once
Carcinoma of fundus near fibroid	Once
Pregnancy, 3 times.....	
Ovarian cysts, 4 times.....	3 %
Severe pyosalpinx, 5 times.....	3.1%
Fresh peritonitis extending from double pyosal-	
pinx	One case
Chronic appendicitis, 4 times	3 %
Large umbilical hernia	One

He prefers the supravaginal extirpation and only used total extirpation where extensive drainage was necessary.

The small number of cases in which carcinoma has occurred in the remaining stump of cervix is not sufficient to influence the method of operation.

Vaginal operations had a less mortality than abdominal, but they required more time and caused the loss of more blood than the abdominal.

He makes no note of the fact that all the worst cases were operated on by the abdominal method in comparing vaginal with abdominal methods.

"The removal of a myoma is a serious operation, however, whether undertaken per vaginam or through the abdominal route, and should be undertaken only as a result of definite indications. Also the fear that a tumor which now may be removed by vagina may later have to be attacked by abdomen is by no means to be considered as magnifying the indications for operation."

Döderlein has done abdominal myomectomy in 232 cases, with a mortality of 3.4 per cent., and by vaginal 198 cases, 4.5 per cent.

Fehling (4) says: "I will not take into consideration here the indications for myoma operations, which are shown by their statistics to be very different in different clinics."

"Since a myoma is a benign growth, it is proper whenever possible to give preference to the removal of the new growth itself,

leaving behind the uterus and the adnexa, provided the ovaries are not morbidly degenerated."

"One may easily decide to do myomectomy in the case of a subserous tumor which from its size is encroaching upon the space of the abdominal cavity, or causing symptoms by attachment to neighboring organs."

"Above all is myomectomy indicated when a tumor which causes hemorrhages is so situated as to admit of its removal. This must be done by the vaginal method."*

"If one removes tumors accidentally discovered, whose size and connections in the abdomen are causing no harm and do not cause hemorrhages, 'so nacht der operateur nur eine Luxus operation und noch dazn eine recht gefäährliche.' So the operator performs an unnecessary and right dangerous operation."

In advocating the abdominal route for myomectomy he quotes the following statistics:

Hoffmeyer, 13 abdominal enucleations, 5 deaths.. 38.5%

Olshäusen, 37 cases with 4 deaths..... 10.8%

Schauta, 25 cases with 5 deaths..... 20 %

Wyder, 48 cases with 6 deaths..... 12.7%

Döderlein, 14 cases, no deaths.....

The average being a death rate in 137 cases of 14.57%

Sarwey gives a list of 465 cases with a mortality rate of 9.6 per cent., which Fehling regards as too low.

Also the patients in 16 per cent. of cases have recurrences, a proposition not compensated for by the proportion of pregnancies.

Haultain (5): "The development and growth of fibroid tumors in the cervix uteri occurs in about 5 per cent. of all uterine fibromyomata. He has met with them in 30 cases out of a total of 260. This does not take into consideration cervical submucous fibromyomata."

"The bladder in all cases was displaced upward into the abdomen. All were incarcerated in the pelvis and gave rise to well-marked symptoms, especially in connection with the bladder."

"In 22 cases considered hemorrhage was present in 10 as a symptom. In 2 cases the tumors showed signs of degeneration; these were edematous and gangrenous."

He finds operation on cervical fibroids much more difficult than those on the body, and has a death rate of 10 per cent., as com-

*Experience does not prove this statement to be true.

pared with hysterectomy for fibromyoma of the body, where his mortality has been only 1 per cent. Three of those deaths were due to septic infection; the cause of the fourth is not stated.

Finally, after a consideration of the subject from all points of view, I feel that there is no disease to which women are subject where each individual case requires to be considered alone and treated according to conditions and symptoms present than uterine fibromyoma. I hold that all those who fail to give this careful consideration to each case and who adopt the rule to operate as soon as expediency will permit after their discovery are failing to give their patients scientific treatment.

There are a number of happy little children in New York who owe their existence to the fact that I hold these views, and I have the satisfaction of knowing that those few cases who have died after operation have done so trying to obtain relief from symptoms which actually demanded operative interference.

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71 WEST FORTY-NINTH STREET.

ENUCLEATION OF LARGE EXTRAMURAL INTRALIG-
AMENTARY UTERINE MYOMATA, WITHOUT
MUTILATING ANY PELVIC ORGAN. TWO
CASES AND REMARKS.¹

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(With six illustrations.)

THE surgical treatment of uterine myomata by accredited operators is now so satisfactory in its results that the field for further improvement is extremely limited and confined chiefly to minor details and the management of special conditions encountered during an operation. Not many decades ago, before the modern methods of pelvic surgery were evolved, a uterine myoma indicated generally some form of what may be termed expectant treatment, or hysterectomy. Gradually, as the technique improved, attention was given to conservatism in the work. The evolution of this phase of pelvic surgery presently made it plain that in certain conditions it was neither necessary nor even justifiable to remove the uterus or any other pelvic organ. Thus the term myomectomy appeared in our literature, and it will ever hold a prominent place in the list of the operative procedures of the gynecologist.

As a general rule, a patient, at or near the climacteric, who has a simple pedunculated subperitoneal, or an ordinary submucous tumor, is relieved without mutilation. For obvious reasons in younger patients the scope of the work has been widened and its limitations vary according to the avocation and condition of the patient and the experience and skill of the operator. Still, in regard to certain phases of this form of conservative surgery, the pendulum of medical opinion continues to swing and will do so until experience leads to the solution of more surgical problems. After a review of all the literature available, I have failed to find any record of a successful myomectomy for an intra-

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

ligamentary myoma of a size sufficient to crowd the abdominal and pelvic cavities. Yet it is not without some diffidence that the following cases and remarks are presented for your consideration. It should be borne in mind that the remarks are applicable only to cases in which the growth is large.

CASE I.—Large myoma on right side of the broad ligament. Mrs. T. H., age 43 years, entered St. Joseph's Hospital, Guelph, December 26, 1906. Family history: Excellent. Personal history: Until last October she had always enjoyed excellent health and, except when her only child was born, had never been confined to her room. Married eight years; one child five years of age; one abortion before birth of child at second month of gestation. Menstruated first in her twelfth year and had never missed a period except during term of pregnancy and lactation.

In May, 1906, she noticed that her abdomen was larger than formerly and by July the enlargement was so pronounced that she consulted a medical man, who, after an examination, told her that she was in the sixth month of pregnancy. Being regular, and having no other sign of pregnancy than the enlargement, another physician was consulted, who arrived at the same conclusion. In October symptoms due to pressure became troublesome and gradually grew in severity. The vesical irritation caused the most distress, and by the middle of December she had to void urine hourly. I saw her on the 20th of that month and advised her to go to the hospital for surgical treatment.

After entering the hospital, a careful examination failed to detect any other abnormal condition than a large myoma, which caused pressure symptoms on the abdominal and pelvic viscera. At this stage the outline of the abdomen resembled very much that of a woman at the full term of pregnancy, but palpation showed that the contour of the tumor was irregular. Closer examination showed that the growth filled the pelvic as well as the abdominal cavity, that it was firmly fixed, and that its lower portion almost reached the vaginal orifice. The cervix was displaced to the left and backward. With considerable difficulty a sound was passed, which took a course to the left and backward instead of into the tumor.

The history of the case and the character of the growth left no doubt as to its nature, and the data, to which reference has been made, indicated its probable situation and site of origin. On the 29th of October she was taken to the operating room and a long

median incision was made from above the umbilicus to the pubes, through all the structures to the subperitoneal tissue. It was then found that the tumor in its growth had stripped off the serous coat from the anterior wall of abdomen up to the umbilicus. The



Fig. 1.—Large intraligamentary myoma successfully enucleated without injury to uterus or any pelvic organ. Weight of tumor, twenty-six pounds. Recovery.

abdominal cavity was then opened by cutting through the parietal peritoneum from the site of its reflection at the umbilicus upward. On introducing my hand the uterus was located on the left side of the tumor. It was flattened and greatly elongated by pressure.

Its fundus was near the summit of the growth, and, the cervix being in the pelvis, one can judge to what extent the body of the organ was stretched. In fact, the distorted organ formed a portion of the sheath which enclosed the upper part of the myoma and separated it from the peritoneal cavity. The right fallopian tube could be traced running to the right over the summit. On the right side the cecum and lower portion of ascending colon were found to be pushed upward and spread over the surface. The rough diagrammatic figures will probably convey a better

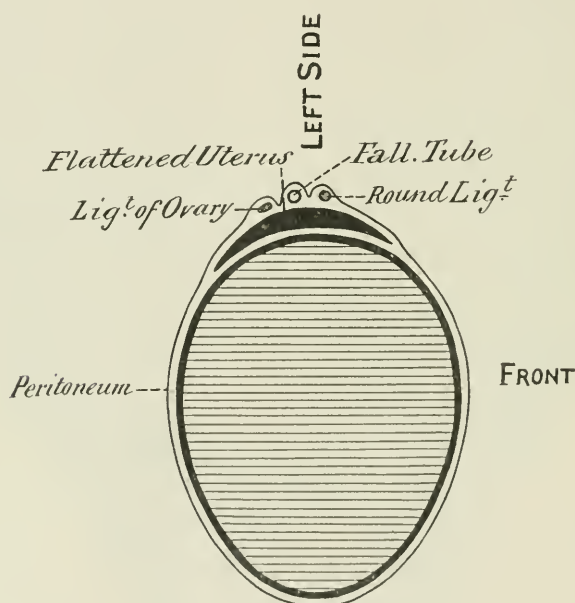


Fig. 2.—Cross-section of tumor and its sheath.

conception of the conditions that existed than my written description.

Figure 1 shows a cross section of the tumor and its sheath. Figure 2 is a lateral longitudinal section through tumor and uterine portion of the sheath.

Figure 3 is an antero-posterior longitudinal section showing the high point of the reflection of the peritoneum in front and behind. Also the low elevation of bladder in median line in front.

Below the umbilicus in the line of the incision the tumor was covered by a layer of subperitoneal or areolar tissue; this was divided and the smooth surface of its capsule exposed. This area

of exposure was extended upward several inches by cutting, in addition, the peritoneal covering of the tumor. Then, two forceps were attached to the whole thickness of the sheath near the upper end of the incision in it, and given to an assistant to hold, with instructions to make some traction away from the tumor and toward the chest of the patient. This procedure made it easy for me to introduce my hand under the sheath and on the smooth surface of the capsule proper, effectually protecting the abdominal viscera from being soiled, or even touched or exposed during the

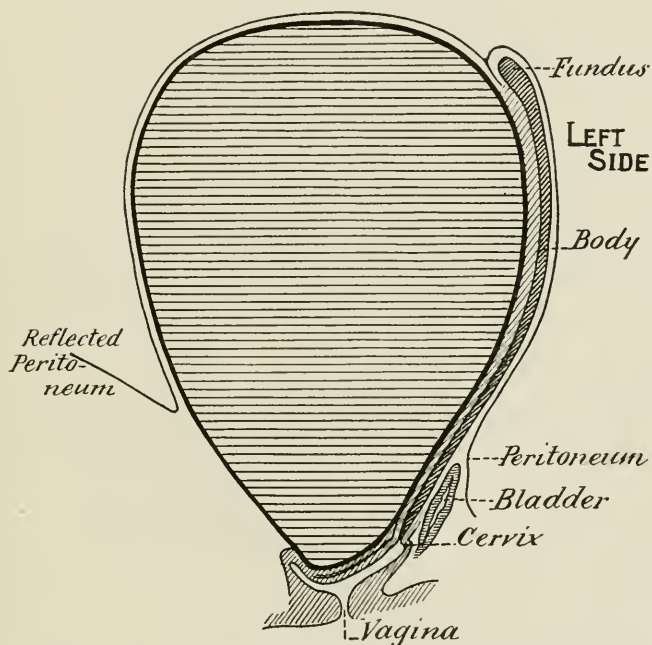


Fig. 3.—Lateral longitudinal section through tumor and uterine portion of sheath.

enucleation. Except the pedicle, I found no firm adhesion anywhere between the sheath and the tumor. When a sulcus on the irregular growth was reached the obstruction was easily overcome by making the detached sheath at the part tense by traction and then raising the points of my fingers off the tumor. By these means and by traction on the tumor with Tait's corkscrew the enucleation and delivery were accomplished with astonishing ease.

The site of the attachment of the pedicle to the uterus was on the right side near the middle of body of the organ. The

pedicle was not larger than an ordinary penholder. It was tied with a No. 1 sterile catgut and this was the only ligature used in the operation. There was practically no loss of blood, merely a little oozing during the stripping of the sheath. It appeared marvelous to me how quickly the displaced and stretched organs and the other structures retracted and contracted toward their normal condition. The contraction made the opening in the peri-

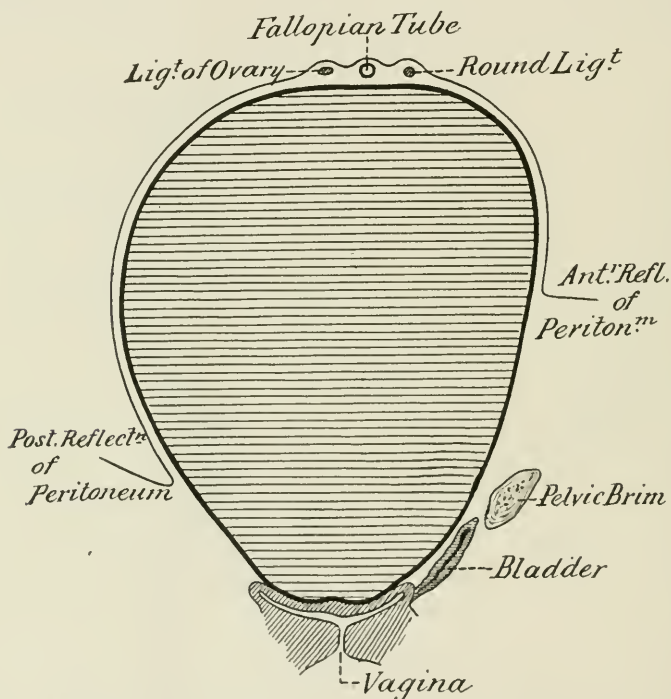


Fig. 4.—Antero-posterior longitudinal section, showing high point of reflection of peritoneum in front and behind, also low elevation of bladder in median line in front.

toneum very small, and there being no oozing, the wound was closed in layers without drainage. No shock resulted from the operation and the patient recovered without a single untoward symptom. An examination twelve days after the operation found all the pelvic organs normal. The tumor weighed a few ounces more than sixteen pounds. I visited the patient last week and found her enjoying excellent health, with no indication of any pelvic or other derangement.

CASE II.—Large myoma in left side of the broad ligament. Miss A. G., age 32, height 5 feet 2 inches, was admitted to the hospital on the 19th of March, 1907. Family history: Negative. Personal history: In childhood she had infantile paralysis, which affected the extensor muscles of her left leg, causing her to limp in walking. Otherwise, until a short time before coming to Guelph, she had always enjoyed excellent health. Her first men-

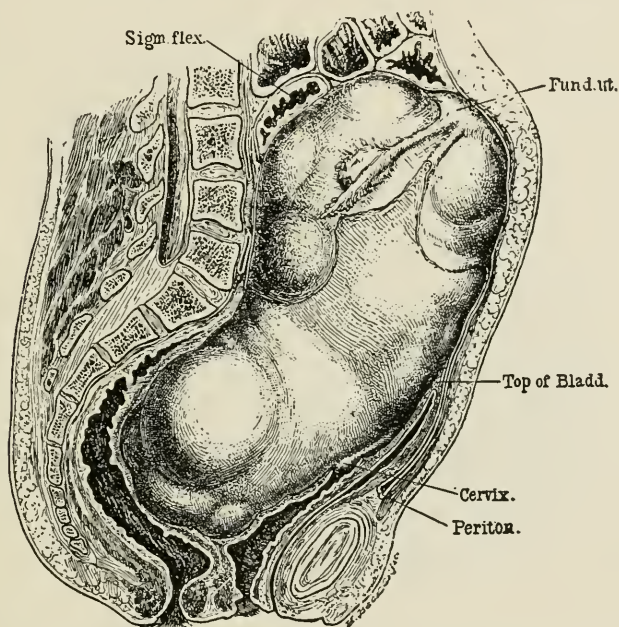


Fig. 5.—COMPLICATED HYSTERO-MYOMECTOMY, SHOWING EXTENSIVE SUBPERITONEAL DEVELOPMENT.

The cervix is raised high out of the pelvis, and the bladder has been forced up into the abdomen. The fundus uteri lies high above the umbilicus opposite the displaced sigmoid flexure. The line of reflection of the peritoneum over the side of the tumor is shown. Hystero-myomectomy. Recovery. February 9, 1895.

strual period appeared in her thirteenth year, and since that time she had never missed a period. Its duration had always been three days and the flow had never been excessive. In 1903 she noticed that her abdomen was more distended than formerly, but as her health was good no attention was paid to it. Slowly, as time passed, the enlargement increased without causing anxiety until pressure symptoms and her unwieldy form became pronounced. An examination showed that the abdominal and pelvic

cavities were crowded almost to the limit of endurance by a large myoma. The lower ribs were pushed upward and bulged outward. All that could be ascertained by vaginal examination was that the whole pelvic cavity was filled almost from inlet to outlet by an immovable rounded mass. The cervix could not be reached. On the right side of the pelvic portion of the tumor a flexible bougie could be passed for a considerable distance with-

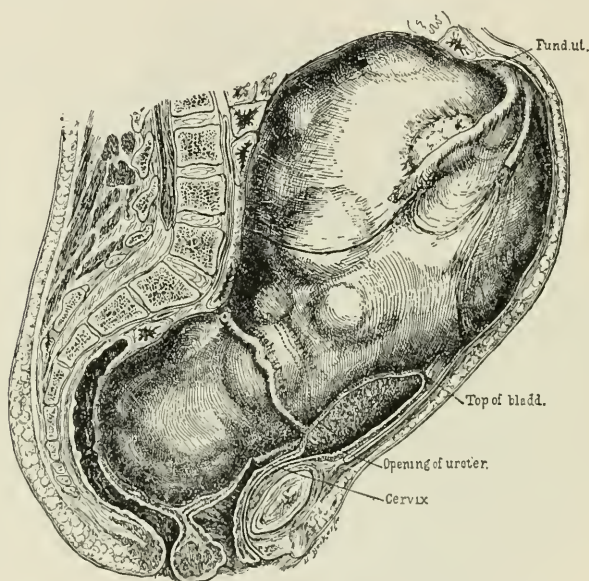


FIG. 6.—COMPLICATED HYSTERO-MYOMECTOMY.

The pelvic peritoneum is displaced high up into the abdomen by the enormous myomatous uterus, as indicated by the line beginning above the bladder and extending up to the round ligament, the oviduct, and ending above the sacral promontory. The fundus lies above and on top of the uterus; above the umbilicus lies the sigmoid flexure, seen in cross section. The bladder lies wholly in the abdomen, and both ureters are displaced above the pelvic brim; the left is indicated in dotted outline. The pelvis is also choked by the tumor, and the cervix lies near the level of the superior strait behind the symphysis. Hystero-myomectomy. Recovery.

out meeting obstruction, but on the left side and in front of it the instrument was arrested after passing a short distance. I found that it was impossible to pass a steel sound into the bladder, so its location could not be determined.

On the third day after this patient entered the hospital I opened her abdomen and found the parietal peritoneum below the umbilicus stripped in the same manner as in my first case. On inserting

the hand the flattened uterus was located on the right side of the tumor, with its fundus near the summit and the left fallopian tube running to the left across it. An effort was made to determine the course of the left round ligament, but I failed to find even a trace of it. To the left of the incision a portion of the large bowel, probably the sigmoid flexure, was spread over the surface. No difficulty was encountered in the enucleation and delivery of the abdominal portion of the tumor, but in separating the left side of the pelvic portion I had some trouble. Here, it had to be cut with scissors and torn, leaving a portion of it, which was removed at a later stage of the operation. It is probable that the difficulty was caused by failure of my hand to follow the proper line of cleavage owing to some inequality of the surface of this part which I failed to notice at the time.

The pedicle was attached to the uterus a little below the left fallopian tube. It was tied, as in the other case, with fine catgut. In this case there was a little oozing in the pelvis, for which a drain was inserted in the lower end of the wound. It was removed the following morning. The recovery of the patient was rapid and uneventful. The tumor weighed twenty-six pounds, or more than one-fifth the total weight of the patient before the operation. The photograph appended, taken several days after the removal, gives a fair representation of the contour of its anterior surface and its outline. Unfortunately, no article of known size was photographed with it for comparison. Its pedicle is not visible in the photograph; the tag at the lower end was caused by faulty enucleation of pelvic portion.

The broad ligament sheath, or cap, which covered the upper part of the abdominal portion of the tumor in both instances, was capable of great distention without being torn. It is possible, nay, probable, that in future these large growths may be enucleated without opening the peritoneal cavity. By making the abdominal incision through the outer margin of the right, or left, rectus muscle, according to the site of origin, one can get away from the anchored part of the parietal peritoneum at the umbilicus.

By exercising ordinary care there is no danger of cutting the bladder, for it is pushed aside with the uterus. In neither of my cases was the bladder raised above the pelvic brim in the median line. True, a ureter may cross in front of the pelvic por-

tion or even higher, but, by keeping the enucleating hand on the smooth capsule of the tumor, there is no possibility of injuring it or any other organ. In structure the character of both the tumors was that to which some authorities apply the term edematous fibroid.

The ease and rapidity with which I was enabled to remove these large tumors without injuring any pelvic organ and with practically no loss of blood or exposure of the abdominal viscera, the requirement of only a small ligature for each case, the absence of shock afterward, and the quick recovery to perfect health, have convinced me that for such conditions enucleation is preferable to hysteromyomectomy, regardless of the age of the patient or the size of the tumor.

In the modern works on gynecology are to be found records of similar intraligamentary myomata and beautiful illustrative plates, which, in my judgment, indicate with more than ordinary clearness conditions that are more easily and more safely relieved by enucleation than by hysteromyomectomy; besides by enucleation we preserve the pelvic organs. Through the kindness of Dr. Howard Kelly of Baltimore I have obtained permission to photograph figures 513 and 514 in the second volume of his exhaustive and admirable work on "Operative Gynecology." It was during an examination of these cuts that I first came to the conclusion that all large, single, intraligamentary, uterine myomata which have the conditions shown so plainly in the plates must be extramural.

In the small space on each side of the body of the uterus, between the folds of the broad ligament, run the large bloodvessels and lymphatics which supply the uterus with the requirements for its nutrition, and the nerve trunks which transmit the impulses of the emotions that affect the organ. Then, in this situation at the base of supply, it is natural to believe that the adjacent uterine tissue is more developed and more capable of prolonged action than that of the more distant parts. A growth, then, should develop here quicker than in the other parts and hence cause greater irritation and muscular action; besides, there is the absence of the tense and closely adherent peritoneal coat which in other parts of the uterine body makes considerable resistance to any local protrusion of the underlying parts. When the point of origin of a myoma is near the surface of either of the lateral spaces the conditions undoubtedly favor its expulsion from the uterine wall into the broad ligament.

Take into consideration the smallness of the combined area of the lateral spaces, review the records bearing on the subject, each using his own personal experience, and then I believe you will concur with the statement that the relative proportion of the intraligamentary myomata that becomes extramural or pedunculated is greater than that of the varieties which originate under the peritoneum elsewhere on the body of the uterus.

The following are the chief points in the differential diagnosis between this and the other varieties—namely, the immovable condition of the tumor, the amount of pelvic involvement, the comparatively rapid growth, the absence of menstrual derangement and, when the cervix has been forced above the pelvic brim, the difference in the length to which a flexible bougie can be introduced on the opposite sides of the vaginal portion of the growth.

235 WOOLRICH STREET.

A CASE OF SUBPERITONEO-PELVIC FIBROID COMPLICATING A FOUR MONTHS' PREGNANCY. HYS-TERECTOMY. ENUCLEATION OF FIBROID. SECONDARY HEMORRHAGE ONE WEEK AFTER THE OPERATION. PELVIC ABSCESS. RECTOVAGINAL FISTULA. RECOVERY.¹

BY

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THIS patient, Mrs. L., German descent, was referred to me March 14, 1907, by Dr. Neufarth, Sunman, Ind. Farmer's wife; mother of five children. The last child was born dead five years ago. All labors were normal except the last, which was very protracted and terminated in the spontaneous delivery of a dead and macerated child. The menstrual history shows a marked irregularity in periodicity during the past year; one, two, and even three months having been omitted. She menstruated the last time December 2 to 5, 1906. Father died aged 55, of carcinoma recti; mother died, aged 54, of biliary calculi. Four brothers and two sisters are living and in good health; two brothers

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

died in early infancy and one died, aged 24, of typhoid fever. One sister died, aged 22, of pulmonary tuberculosis and another, aged 6, of scarlatina. Patient's general condition good. She complained of nothing except a sense of discomfort in the epigastrium and a feeling of weight in the pelvis. Appetite good, bowels constipated.

Physical examination revealed, first, an extensively lacerated perineum; second, a pelvic cavity filled by a firmly fixed tumor, free from tenderness and of semi-solid consistency; third, the os uteri can be reached with difficulty only above the level and in close contact with the upper border of the symphysis pubis; fourth, another tumor, the size of the fist, can be felt through the abdominal wall in the suprapubic region; fifth, inspection shows no discoloration of the vulval or vaginal mucous membranes and the "vaginal pulse," indicative of pregnancy, is absent. Besides the above, the patient portrays nothing abnormal.

Diagnosis.—Uterine fibroid or fibroids, possibly complicated with pregnancy. Of the latter one could not be at all certain, because of the irregularity of menstruation and the absence of all other local or general symptoms of gestation. The sense of weight in the pelvis and the discomfort in the epigastric region were explained by the presence of the tumor filling the pelvic cavity. It was impossible to determine at the time whether the mass in the pelvis was the retroflexed uterus containing an interstitial fibroid and the tumor above representing a pedunculated fibroid in the anterior uterine wall; or whether the suprapubic tumor was the uterus and the tumor in the pelvis a pedunculated (or separated) fibroid either intraligamentary or subperitoneo-pelvic.

Treatment.—Hysterectomy suggested, even though pregnancy should exist. This advice was given for the following reasons: 1st. If the tumor occupying the pelvic cavity was the retroflexed uterus containing an ovum as well as an interstitial fibroid, the pregnancy could not continue to exist very much longer with the uterus in this position. 2nd. If the tumor in front and above the symphysis pubis was the pregnant uterus, the embryo (or fetus) could never be delivered per *vias naturales* at any period after the fourth month of gestation. 3rd. The use of the uterine sound for diagnostic purposes was certainly contraindicated in this case. 4th. Under the circumstances it did not seem right to postpone radical procedures until either a positive diagnosis of

the existence of pregnancy or the exact character of the tumor could be established; besides, the conditions present made it very doubtful whether an absolute diagnosis would ever be possible and the policy of waiting for further developments would have implied an invitation of complications arising from local, as well as constitutional disturbances.

Operation, March 25, 1907, four months after the last menstruation. The existence of pregnancy revealed itself the moment the abdominal cavity was opened. The pregnant uterus was in immediate contact with the anterior abdominal wall, the fundus almost on a level with the umbilicus. There were no adhesions; both broad ligaments with ovaries and tubes were floating loosely on either side of the womb. The entire genital apparatus was easily lifted from the abdomen through the incision. But there was no tumor in sight. For a moment the horror of having committed a serious blunder flashed through the minds of all present. But, passing the hand into the abdomen to the pelvic inlet, a real tumor, filling the pelvic cavity to the brim, was discovered, greatly to the relief of all. But the conditions found were entirely different from what had been expected and certainly unique in my own experience. It was the first time I encountered a distinctly subperitoneal pelvic growth, and it was at once apparent that unless the uterus was reduced in size or completely removed it would be impossible to deal with the tumor intelligently and safely. The growth so occupied the pelvic cavity that the examining finger could not pass anywhere between it and the pelvic wall. The stretched vagina was pushed against the symphysis in front, the rectum and lower third of the sigmoid flexure against the sacrum and left sacroiliac synchondrosis behind. The bladder, uterus and appendages had been carried above the pelvic brim and over to the right so that the cervix was entirely past the median line.

Emptying the uterus by incision was promptly discarded. Not enough room could be gained thereby and it would certainly pave the way for sepsis subsequently. Amputation of the uterus and its adnexa appealed to me as the best method of procedure, not only in creating all the necessary space to remove the tumor, but giving the patient the best chance for recovery.

Hysterectomy was promptly performed, the portio vaginalis alone being permitted to remain. An incision was then made through the peritoneum covering the tumor, extending from the

cervical stump to the left sacroiliac synchondrosis and, with the sweep of the index finger, the peritoneum was easily separated from the tumor. Unable to introduce my hand through this opening to enucleate the mass, another incision was made into the peritoneum extending from the center of the first cut to the left iliopectoneal eminence. Through this opening the fingers and subsequently the whole hand were easily insinuated between the neoplasm and the soft parts of the pelvis. The adhesions, which were strongest near the cervix, were carefully broken up and the tumor liberated with some difficulty. There was very little hemorrhage. No bloodvessels had to be tied. The oozing was promptly arrested by packing the pelvic cavity firmly with gauze sponges wrung out in hot, sterilized, saline water. After this the peritoneal folds were placed back in their normal position and united with very fine catgut. The cervical stump, too, was carefully sewed over with ordinary No. 4 catgut. The abdominal incision was closed without drainage.

The first week following the operation the case progressed without a single untoward symptom. Pulse and temperature were normal at all times. The bowels moved freely and regularly after the first twenty-four hours. On the morning of the eighth day a copious and threatening hemorrhage occurred from the vagina. Upon my arrival, one hour later, the patient portrayed the most impressive picture of profound exsanguination. The hemorrhage had ceased spontaneously, apparently, because there was no more blood to be lost. The effect of the hemorrhage was met by lowering the patient's head, placing warm-water bags against her sides and the subcutaneous injections of strychnine and digitalin. Intravenous injection, hypodermoclysis and enemata of the normal saline solution were omitted under the belief that hemorrhage had ceased because of lack of arterial pressure. Instead, small quantities of albumin were administered by the mouth at short intervals. There was no return of the hemorrhage and the patient rallied slowly but steadily.

Ten days after the operation, forty-eight hours after the hemorrhage, the patient's temperature began to rise slowly. There was no pain; indeed, she expressed herself as feeling quite well. On the twelfth day the temperature had risen to 102.5° F.; pulse, quite distinct, 120. The abdomen was flat and free from tenderness. Digital examination of the vagina, the first since the operation, revealed a tender fluctuating swelling, the size of an orange,

behind and to the left of the cervical stump. Evidently an abscess had formed in the subperitoneal space. This was promptly opened by an incision immediately behind the cervix and the cavity gently packed with gauze. The subsequent treatment consisted of removal of the gauze, irrigation, and repacking of the abscess cavity at proper intervals.

The patient recovered slowly but perfectly. She left the hospital six weeks after the operation with a small, not very annoying fecal fistula within the incision through which the abscess had been evacuated. This, too, closed in due time.

ARGUMENT.

Difficulties of Diagnosis.—No one will appreciate more the difficulties of diagnosis in a case of this kind than the experienced obstetrician, gynecologist, and abdominal surgeon. As to the existence of pregnancy in this instance, there was but one symptom present—cessation of menstruation for a period of not quite four months. The value of this symptom was very much reduced because of a similar experience during the past year. Though the possibility of a pregnancy was not altogether excluded, the case was regarded as one of multiple uterine fibromata, and, as the history of these growths justify a prompt removal, an operation was advised and accepted. The writer knows of no means by which a diagnosis of a subperitoneo-pelvic growth could have been established in this case prior to the operation. The use of the sound for diagnostic purposes was strictly contraindicated here, to say nothing of the fact that, as an instrument of diagnosis, it is of comparatively little value and very frequently it becomes a source of danger.

Was the operation the proper procedure, and justifiable at that period of gestation? Could the growth have been successfully removed per vaginam? It is difficult to see what other method could have been adopted under the circumstances. It is freely admitted that, had the exact location and character of the tumor, and the existence of pregnancy been known positively, this knowledge would have been an inducement to adopt one of two procedures—namely, to enucleate the fibroid through an incision in the vagina and let the pregnancy take care of itself; or to wait until the period of viability had been obtained, then make a Porro-Cesarean operation and remove the tumor. From what we know of the case now, it is extremely doubtful whether the period of

viability would have been reached with safety, and, even had this been possible, the child's chance for life would not have been very good, nor would the prospect of the mother's recovery been much improved. Removal of the tumor through the vagina would have been a comparatively safe and, perhaps, not a very difficult procedure, saving both mother and child. The worst that might have happened is a miscarriage or premature birth. But neither the pregnancy nor the location and character of the tumor could be definitely determined by any means before the abdomen was opened.

Was this tumor the cause of the prolonged and difficult last labor and of the still-birth? This is merely a matter of speculation, though it is more than likely that the tumor was in its infancy at that time; because the child was born (vertex presentation) with an excessively molded head and depressed cranium. The body was macerated.

Was the catgut, used in ligating the uterine arteries and closing of the cervical stump, responsible for the secondary hemorrhage? Ordinary sterilized catgut No. 3 was employed, and it is not at all improbable that, when the catgut began to soften after 24 or 48 hours, a slow bleeding began; not enough for the blood to show externally, but sufficient to cause distention within the stump, thus gradually increasing the hemorrhage and producing a leakage into the subperitoneal space. It is well known that there are many abdominal surgeons who refuse to use catgut for ligatures within the abdominal cavity for this very reason. For more than twelve years I have used nothing but catgut and with constantly good results. Previously it was my custom to use silk, with results not very satisfactory. If an infection occurred within the field of operation, complete recovery was delayed until the ligatures had come away either through the vagina, the abdominal incision, or some other avenue. For this reason silk was abandoned for catgut, and thus far without regret. While it is possible that the catgut may be to blame for the trouble that followed the operation in this case, we can by no means be certain of it.

Was the abscess the result of the secondary hemorrhage? Or was a previously formed hematoma within the subperitoneal space the cause of the hemorrhage? The writer is disposed to believe that the severe hemorrhage at the end of the eighth day was the result of a hematoma within the subperitoneal space. This hema-

toma began to form slowly, early after the operation, and resulted from an oozing from the raw surfaces created by the enucleation of the neoplasm. The peritoneal folds, being loosely attached to the other soft parts of the pelvis, yielded readily and painlessly to the accumulation of the coagulum. This explains why there was no pain nor rise of temperature during the first eight days following the operation. About this time, however, a good deal of tension must have been created by the clot, in consequence of which one or the other, or both, of the uterine arteries gave way and the blood found a ready outlet through the cervical canal. After the hemorrhage ceased an avenue of infection (the cervical canal) between the vagina and the hematoma had been established. The infection was prompt and the abscess quickly followed.

As the patient's condition was in every way satisfactory during the first week there was no necessity or even an excuse for a digital examination. Nor was it deemed proper to make a digital investigation at the time, or soon after, the hemorrhage had stopped. An examination was promptly made the moment symptoms manifested themselves that pus had formed somewhere. This was on the twelfth day after the operation and on the fourth day after the hemorrhage. Had the hemorrhage occurred in the absence of a hematoma the blood could not have found its way into the subperitoneal space, because of the firm union existing by that time between the peritoneum and the pelvic soft parts. Hence it is reasonable to presume that a hematoma was present in this region when the hemorrhage came on; that the hematoma caused the hemorrhage as described and in consequence of which the hematoma became infected from the vagina through the cervical canal.

History of uterine fibroids. Fibroid tumors of any kind rarely complicate pregnancy. The rarest form of uterine fibroids is the subperitoneo-pelvic variety, which, it is claimed, originally spring from the uterus, but in the course of development become separated from that organ and remain independent, as illustrated in the case just presented. According to Mann, only 650 cases of fibroids complicating pregnancy have been reported the world over. Mann quotes C. P. Noble, who collected 2,274 cases of fibroids, of which only nineteen (0.08 per cent.) became pregnant, six of which were ectopic. The same author also quotes Pinard and Schroeder. The former observed 84 fibroids in 13,917 labors, 0.06 per cent. The latter met the complications 25 times in 20,000

labors, 0.012 per cent. Mann, in his own extensive experience, met with ten cases of pregnancy associated with fibroids.

The writer has seen only four cases of fibroids complicating gestation in thirty-two years of private and clinical practice. One of them belonged to the interstitial, two were of the pedunculated (subperitoneal), and the fourth, reported above, of the subperitoneo-pelvic variety. The first was delivered by Cesarean section after being in labor three days. The child was dead and the mother died of sepsis. The second and third delivered themselves and never reappeared for treatment. The fourth was treated as above stated. It is well known that, ordinarily, women with fibroids do not become pregnant and that those who have had children very rarely suffer from fibroid tumors of the uterus. My first three cases were all primipara past the age of thirty; the fourth was a five-para past the age of forty. The general opinion held by authors is that sterility is the cause rather than the effect of fibroids. Hence the frequency of uterine fibroids in the unmarried and multiparous women.

Pregnancy has a two-fold effect upon fibroids: *First*, with the increased blood supply to and gradual growth of the uterus, the tumor or tumors, too, increase in size. This growth is due to an actual increase in the fibromyomatous tissue as well as a considerable amount of edema. The latter condition was especially well marked in the specimen presented and because of its semi-fluctuant consistency gave rise to the suspicion that the pelvic tumor was the uterus, if pregnancy existed at all. *Second*, opinions are somewhat at variance as to the effect of involution upon the tumor in case of miscarriage, premature labor or delivery at term. The immediate effect is, no doubt, a reduction in the size of the fibroid, usually to the dimensions it possessed before conception. While it cannot be denied that sometimes the fibroid may be entirely absorbed in the course of involution, in the majority of instances it is more than likely that these tumors not only continue to exist, but begin to grow anew after involution has been completed.

Time will not permit me to dwell upon the serious dangers that may arise when uterine fibroids complicate gestation, and for the same reason it is impossible to consider the treatment. It is the earnest hope of the writer that discussion will bring out the most important points with regard to both.

TEMPORARY URETERO-VAGINAL FISTULA AFTER
PANHISTERECTOMY FOR FIBROID
OF THE UTERUS.¹

BY

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THE interest of the case I wish to present to the Association lies in its postoperative complication and its satisfactory outcome. Mrs. T., 48 years old, mother of six children, came to me fifteen months ago, stating that she had a fibroid of the uterus. She said she had known of its existence for ten years, the tumor having been discovered by the physician who attended her at her last confinement. Since a sister had died after an operation of this kind, she had refused operation. The history of the case revealed nothing of great import, except that bleeding from the uterus had been almost constant during the past year—having been, previously, of a profuse nature and of ten days' to two weeks' duration. The monthly character had been fairly observed until the past year. Pain had been and was moderate. Patient felt extremely exhausted and was highly anemic.

Upon abdominal examination, a firm, round tumor could be felt, reaching up to the middle between the umbilicus and the xiphoid process, in size about equal to the uterus in the eighth month of pregnancy. Uterine bruit was distinctly audible over most parts of the tumor. On combined vagino-abdominal examination, the tumor could be felt dipping deep down into the pelvis, particularly so on the left side. The body of the uterus could not be outlined, the neck having entirely disappeared. The tumor could easily be diagnosticated as a fibroid of the uterus. The examination of the heart, lungs, kidneys and blood being satisfactory, except for a rather low hemoglobin percentage (40 per cent.), the operation was urged and accepted.

Until about the time of this operation, that is, about fifteen months ago, whenever, after abdominal section, the location of the fibroid permitted, I preferred supravaginal amputation of the uterus to panhysterectomy. Late reports on the question of

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

panhysterectomy versus supravaginal amputation of the uterus, as well as recent experiences of my own, have caused me to change my former opinion and to perform, in all cases, total hysterectomy. The sole contraindication is such extreme weakness of the patient, that even the moderate increase in time required by this operation might prove hazardous.

The main reason for such a change of mind is, that there is practically no longer any difference in the mortality of the total and the supravaginal removal of the uterus. The slight increase in time and difficulty of the total excision should not prevent its general acceptance, if thereby better permanent results are secured. And there is no doubt that such results would be obtained. After supravaginal amputation it is by no means a rare occurrence for malignant trouble to develop in the stump of the cervix. I agree with Winter, Bovée, and others, that most of the stump carcinomata are the result of malignant degeneration of existing fibroids, or of simultaneous independent carcinomatous degeneration of the corpus uteri, without malignant change in the fibroids themselves. Also, for such carcinomata of the cervical stump as may appear several years after supravaginal amputation, and are, in my belief, absolutely independent diseases, panhysterectomy removes all possibility.

There is no doubt that early symptoms of malignant degeneration of fibroids or of the mucous membrane of a fibroid uterus cannot be determined by clinical symptoms, or even by manual exploration, or thorough curetting. The uterine cavity of a fibroid uterus is too large and irregular to allow of such accuracy of either method as is necessary for a decision. In addition, there is the danger of infection from these procedures, if supravaginal amputation follows. Even the introduction of a sound might prove a source of such danger.

In my opinion, then, total extirpation of the uterus, in our days of perfected technique, should be the operation of choice. Those operators who do not think the danger of malignant degeneration so great as to warrant giving up supravaginal amputation, with or without leaving a small part of the mucous membrane of the corpus uteri—those I would advise to at least carefully examine the specimen removed, before sewing up the abdomen, and so save themselves a disagreeable surprise after completion of the operation. In case malignant degeneration is found, the danger of infection has, of course, been greatly increased. (If we consider what difficulties the treatment of the stump of the cervix in my-

omectomy presented, and how, for several decades, the best surgeons of the world strove to develop a safe method for its treatment, we find it hard to understand at the present day, why the advice of Bardenheuer, as early as 1881, to extirpate the cervix with the uterus, was not followed more generally. The only reason I can see is that the experience with Freund's panhysterectomy for carcinoma uteri had been so very unfavorable. The operators apparently lacked courage for its trial in fibroid operations. If in this class of cases further attempts had been made, I am sure panhysterectomy had become more popular and many modifications of the treatment of the cervical stump unnecessary—I may be permitted to state here that conservatism in large fibroid operations is not often justified, because of the usual multiplicity of the fibroids; it is almost inevitable that small nuclei remain, which frequently grow then with rather increased activity. However, the wish of the patient, not to be deprived of the menstrual habitus and of the possibility of bearing children, might induce the operator to save the uterus. But pregnancy after removal of fibroids of the size of a child's head or larger is rare and the danger of pregnancy and confinement in a uterus badly scarred in several places is to be considered.

To proceed with the case after the digression—I performed panhysterectomy with removal of tubes and ovaries in the typical way, keeping very close to the tumor and uterus. In this way, as is well known, injury to the bladder, ureter, and rectum is surely and simply avoided. In this particular, myoma operations differ from carcinoma operations, in which, on the contrary, we must keep far away from the uterus and must sacrifice a good part of the vagina. The operation was simple, and even on the left side of the pelvis, where the tumor dipped far down between rectum and vagina, it was not necessary to raise the ureter from its bed and to injure the ureterovaginal vascular network, the result of which is a frequent cause for necrosis of the ureter. (We have learned this lesson from operations for cancer of the uterus.) After complete stoppage of the hemorrhage, I introduced a small gauze drain into the vagina, and sewed the peritoneum of the bladder to the peritoneum of the Douglas pouch, and then sewed the rest of the peritoneum in the usual linear manner. As a rule, I first sew the peritoneum of the bladder to the anterior vaginal wall, and the peritoneum of the Douglas pouch to the posterior wall of the vagina, and then continue as above. In this case, on

account of the highly anemic condition of the patient before the operation, I did not wish to prolong the work even for the very short time required for this additional sewing.

Everything went favorably until the tenth day after the operation, when the nurse reported that the patient, who had been able to pass her urine normally, was continually wet, though from time to time urine was passed in the natural way. The quantity of the normally passed urine, which had averaged fifty ounces in twenty-four hours, dropped to twenty-five to thirty ounces. Upon vaginal examination, I found a constant dripping of urine from the vagina. I could not, however, discover the location of a fistula. I wish to state here that the discovery of a fistula in the left or right fornix is by no means a proof that the ureter of the same side is injured, since the injured ureter might be pulled entirely to the opposite side by parametrian scar formation. The complete filling of the bladder with permanganate solution showed that there was no incontinence of the bladder. There was no doubt, therefore, that a ureterovaginal fistula existed. In order to find the ureteral orifices in the bladder more easily, I injected 4 c.cm. of a 4 per cent. solution of indigocarmine (Brückner, Lampe & Co.) into the gluteal region, according to the advice of Völker and Joseph. Cystoscopic examination about twenty minutes after this injection revealed the right ureteral opening very plainly by a greenish-bluish discharge. The left ureteral opening could at first not be discovered, but then I recognized a movement of the ureter similar to the contraction of the ureter in discharging urine. But no fluid came from the opening! This symptom, fittingly called by Viertel "Leergehen" of the ureter, was very evident. Its presence, depending upon contraction of the ureter, proved that the peristaltic movement of the ureter continued to the bladder, and that, therefore, there was no complete interruption of the continuity of the ureter, but only an opening in the wall.

I lay special stress on this phenomenon, since, in cases of evident ureterovaginal fistula after operation, it decides with which of the two conditions we have to deal. The differential diagnosis is of importance, since we know that lateral defects of the ureter frequently, even usually, heal of their own accord in about four to six weeks; complete severing of the ureter, as is produced by section or ligation, never heals spontaneously. In the case under consideration there was no marked decrease of urine from the

vagina for about two weeks after the development of the fistula, that is, three and a half weeks from the date of the operation. I explained to the patient the exact nature of her condition, and told her that I trusted the fistula would be a temporary one and would probably close in from two to four weeks. The patient, feeling otherwise well, decided to return home, and two weeks later reported that the quantity of urine coming from the vagina was decidedly less, the amount passed from the bladder increasing. One week later she wrote that no urine escaped from the vagina and that she passed between fifty and sixty ounces of urine.

One of the main reasons for reporting this case is to warn against premature operation for postoperative ureterovaginal fistula. Except in such cases in which there is a certainty of complete interruption of the continuity and in which, therefore, spontaneous healing is impossible—only after nature has had her chance of at least six weeks, should we interfere and perform a secondary operation, reimplantation of the ureter into the bladder, or even nephrectomy.

I examined the patient again only a few months ago and convinced myself that she was absolutely well. Both ureters discharged urine into the bladder; the ureteral catheter entered the left ureter without difficulty. The condition of the pelvis is perfect, not a trace of an exudate being noticeable. I am not in a position to state the exact cause for this ureterovaginal fistula. It did not appear until the tenth day. At the operation, as stated before, I carefully avoided disturbing the ureter in its nourishment. However, a slight mechanical insult to the ureter cannot be excluded. This, in a patient so extremely anemic, may have caused the fistula through secondary necrosis.

To summarize:

1—Panhysterectomy is preferable to supravaginal amputation as the radical operation for fibroid of the uterus.

2—Leergehen (empty contraction) of the ureter is an important point for differential diagnosis between a lateral opening and complete interruption of the continuity of the ureter in ureterovaginal fistula.

3—Operative interference in ureterovaginal fistula, where there is only a lateral opening in the ureteral wall, is not advisable until there has been a chance for spontaneous healing.

465 N. TAYLOR AVENUE.

FIBROID OPERATIONS DURING PREGNANCY.¹

BY

J. H. CARSTENS, M.D.

Detroit, Mich

FIVE years ago I had the pleasure of reading before this Association a paper on "Celiotomy During Pregnancy," in which I reported twenty-one cases operated upon for various conditions, as tumors, hernia, or appendicitis. Among these were four cases of fibroids. Since then I have had three other cases.

The cases previously reported (*AMERICAN JOURNAL OF OBSTETRICS*, No. 3, 1903) are in brief as follows:

Mrs. H. F.; pregnancy of three months complicated by a long-pediced fibroid; myomectomy; uncompleted recovery; delivery at term.

Mrs. P.; age 27; physician's wife; seven years married; no previous pregnancy; anxious to have children; pregnant five months; multiple fibroids; myomectomy; premature delivery at seven months.

Miss C. H.; age 25; four months pregnant; fibroid 2x5 inches in size; myomectomy; further course of pregnancy not known.

Mrs. G. K.; age 34; pregnant five months; myomectomy; much pain during third night; aborted with much hemorrhage, collapse before nurse noticed anything being wrong; died from hemorrhage.

The three new cases are as follows:

Mrs. S. H.; age 42; mother of three children; has been menstruating profusely for some years; is now pregnant four months and has a number of fibroids, one between the uterus and the bladder, which would interfere with labor. Operation October 27, 1903; three fibroids removed; one, situated near the internal os, was 1 inch by 1½ inches in size, and another, situated near the right horn, was deeply interstitial. The tumors were enucleated and the uterine wounds carefully closed. She was taken with labor pains the seventh day and aborted on the eighth. She made a good recovery.

Mrs. A. F.; age 31; no children; always had profuse and irreg-

¹Read before the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held in Detroit, September 17-19, 1907.

ular menstruation. She had a number of hard tumors. I did not suspect pregnancy. Operated June 20, 1905. When the abdomen was opened and the uterus exposed I found that she was pregnant. Removed four fibroid tumors, one near the internal os, two at the fundus, one in the cul-de-sac; two more were so deeply seated that I suspected that I would go through into the uterine cavity, but the tumors did not quite reach to the mucous membrane. The wounds were carefully closed in the usual manner. The woman aborted on the seventh day; otherwise she made a smooth recovery.

Mrs. F. D.; age 42; married ten years; first pregnancy; menstruation had been rather profuse till four months ago, when it ceased; since then there has been a rapid increase in size of the abdomen. The irregular nodular uterus reached to the umbilicus. A tumor could be felt in the cul-de-sac, making it difficult to reach the cervix, which was pushed up nearly to the symphysis. There was also a tumor in the left broad ligament. I made a diagnosis of pregnancy with multiple fibroids. I suggested abdominal hysterectomy, as it would probably be impossible to do a myomectomy. Operation August 15, 1905. On opening the abdomen the diagnosis and the prognosis were verified. It was impossible to save the uterus. I therefore enucleated the fibroid of the broad ligament and performed a saprovaginal hysterectomy. Recovery was rapid.

These seven cases show that operations of this kind can be performed with benefit, although sometimes an abortion follows. It is far safer to operate than to allow such tumors to rapidly increase in size and then interfere with labor. We have all had lamentable cases of the latter kind accompanied by a large mortality.

In my seven fibroid operations during pregnancy there was one death, but this was preventable, and should hardly be charged directly to the operation itself.

The main points I wish to impress are: First, that myomectomy is indicated in certain cases; second, that operation is necessary in all cases of fibroid in the lower uterine segment or in the broad ligament; third, that, as a rule, fibroids at the fundus need not be interfered with during pregnancy.

DISCUSSION.

In the discussion, DR. EDWARD J. ILL of Newark, N. J., presented a specimen, which was removed from a Mrs. T., who had been married one year. She first presented herself through the kindness of Dr. Mead, on April 26, 1906. She was then single and thirty-four years old. Her previous history was uneventful. She was always regular, never flowed excessively, nor had any pain. She complained of an enlargement of the abdomen and was having some slight feeling of heaviness. She menstruated normally and without pain, felt well, and looked the picture of health. Seven years ago she was told there was an enlargement of the womb. An examination showed a solid tumor, filling the abdomen for twenty centimeters above the pubes, and twenty centimeters in width. The cervix was felt high up behind the pubes, and a nodular mass filled the small pelvis, but could not be pushed out. The whole mass with the cervix was fixed. No corpus uteri could be felt. The diagnosis was a myofibroma.

On June 1 she again presented herself. The measurements showed no increase. The size of the tumor, the fixation in the pelvis, and the age of the patient warranted operation. The patient, however, wanted to get married, and as both she and her intended husband, who is a physician, belonged to a very intelligent class of people, the operation was deferred. She was married, and on August 5 of this year, 1907, she again presented herself, having gone over her regular menstrual period by two weeks; but she was perfectly well except a sense of abdominal fullness. Her last regular period was on June 25, 1907, when she had an excessive flow which lasted two weeks. The tumor reached the border of the ribs, and measured 27 centimeters above the pubes and 23 centimeters in width, a marked increase in size for fourteen months. On August 12 she again presented herself, complaining of very severe pain and swelling in the left thigh and leg, so that she was unable to be about and could lie down only with the leg elevated. All this occurred in about two days. On examination the thigh was shown to be swollen and of a slightly darkened hue. There was but very slight pulsation in the left popliteal artery, as compared to the right, and the temperature was lower than the right, as shown by palpation. The abdomen and tumor were very tense and painful; but there was no fever. There was much intermittent backache and much upward pressure under the ribs. There had been no flow of blood. With such threatening symptoms there seemed no alternative but the most prompt interference. The patient was evidently pregnant, and the rapid growth accounted for all symptoms except the intermittent backache, which was explained when the specimen was examined after the operation.

He had never been obliged to destroy intrauterine life, though he had had many narrow escapes, and never to the detriment of

the mother. This case left him no alternative. It was this that prompted him to report the case. To do an abortion through a long, narrow and displaced cervix gave the woman no chance, as the specimen showed. The only thing to do was to remove the whole uterus above the cervix. On August 13 the tumor was removed through an incision of thirty centimeters. During the delivery of the tumor a large hematoma of the right ovary was broken and the peritoneum was stripped off the sigmoid flexure, because of the adherent pelvic portion of the tumor. The operation was a simple supravaginal amputation. The left ovary was left in, and the patient made an easy recovery. She was having at this time but little trouble with her left leg.

The specimen, which Dr. Ill exhibited, measured 35 centimeters in its vertical diameter and 24 centimeters in width and weighed 5,500 grams. The cavity of the uterus measured 10 by 12 centimeters and was filled with a grumous, bloody fluid, in which, still attached to the uterus, near its right horn, was the ovum. It was covered by its decidua reflexa and was macerated to some extent. The amniotic fluid looked turbid, and no fetus was seen. The decidua was of a spongy gray character, and easily removed from the uterine wall. In other words, the ovum was dead and the woman about to miscarry. There had been no discharge from the uterus, because of the very elongated, contracted, and tortuous cervical canal. The intermittent backache was accounted for by the attempted expulsion of the product of conception, which evidently killed the ovum.

DR. RUFUS B. HALL of Cincinnati could not conceive of a practitioner deliberately doing hysterectomy on a woman who had a few small fibroids in her uterus where they were not causing symptoms sufficient to demand relief. A large number of women had small fibroids that gave no disturbance. He could hardly believe that Noble, who had been quoted by one of the essayists, would advise a woman to have her uterus removed the moment a fibroid tumor was diagnosed. However, when a fibroid tumor was sufficiently large to make the woman's condition uncomfortable or dangerous from the pressure symptoms, when she could not be made comfortable by ordinary means of treatment, when there were secondary changes in the tumor, then operation should be considered. He had examined many women and had found small fibroids, but did not think of telling them of their presence for their own peace of mind. He would differ with those who would operate for fibroids at the moment they were discovered. There should be a definite reason when operation was advised for their removal; whether the operation be a myomectomy or hysterectomy, there should be some reason for operating other than the presence of a small fibroid.

The paper dealing with the post-peritoneal fibroids was interesting. He had operated on six or eight cases of post-peritoneal fibroids. He recalled one in which the tumor weighed 16 pounds.

He supposed it was a fibroid, but before he got through with the operation it proved to be a sarcoma, as endorsed by the pathologist. But to all appearances to the naked eye it was a post-peritoneal fibroid. This patient was operated on ten months ago, but up to the present time had not had a recurrence, but she probably would have very soon. He cited other cases.

DR. JAMES F. W. ROSS of Toronto said the most terrible thing that could happen to any woman was for her to develop a fibroid tumor. When a woman had such a tumor she should be dealt with as gently as possible in order to conserve her for the great object of her being; that is, for child-bearing in later years. Whenever she became pregnant she should be consulted before the surgeon undertook to do an operation in the presence of that pregnancy. She should be given a full statement of the case. It was well known that a Porro-Cesarean section or Cesarean section could be done in the latter months of pregnancy successfully and satisfactorily, saving both mother and child. When a young woman, with a small fibroid tumor, consulted him, he asked her whether or not she was engaged. If she was, he advised her to marry, with the hope that she would become pregnant, and with the first pregnancy, if there were local difficulties, and the tumor was likely to do damage as a consequence of the pregnancy, he believed the production of miscarriage in this first pregnancy would do her a great deal of good. After miscarriage he had seen such tumors disappear and the women subsequently bear living children. He instanced such a case.

DR. JOHN A. LYONS of Chicago mentioned a case that was similar to one reported by Dr. Carstens. Fifteen years ago he delivered a placenta, was resorting to the Credé method to contract the uterus, but could not get it to contract. Hemorrhage kept up. The placenta was delivered, examined, but he could not see why there was so much hemorrhage. Further examination disclosed a submucous fibroid as large as one-half of a fetal head. After its removal the uterus contracted without any ill results. The woman had borne several children since.

DR. HERMAN E. HAYD of Buffalo, N. Y., said that myomectomy, in his experience, was often a very easy and simple undertaking. Often the tumor had such a long pedicle, and sometimes a thin pedicle, that it could be removed without the least difficulty and without any danger. Moreover, it was surprising to see how easily tumors could be shelled out even when they had no pedicle; and how much traumatism the uterus would tolerate, and yet practically be left in as a good functioning organ. Nevertheless it required good judgment and considerable experience to know when myomectomy should be performed in preference to hysterectomy, because it was practically impossible to determine, even with the uterus in hand, whether in the structure of the uterus there were not embedded numerous fibroids; therefore, the operation of myomectomy in his judgment should seldom be

done. Twice he had been compelled to operate a second time upon women in whom he thought he had left a normal uterus, but inside of two years these uteri grew to be the size of a turnip.

As to supravaginal hysterectomy, it had a mortality of at least 5 per cent. less than hysterectomy in the hands of the best operators in the world; while panhysterectomy had a mortality of at least 9 to 10 per cent. in the hands of the same operators.

DR. CHARLES L. BONIFIELD of Cincinnati, O., spoke of fibroids complicating pregnancy. Two years ago he reported five cases. In the first case the woman had been delivered, and he was asked to see the case in consultation because she was thought to have an inverted uterus. When he arrived he found she had expelled a fibroid nearly as large as a cocoanut, which was snipped off with a pair of scissors. The woman recovered. This case showed how large a submucous fibroid might exist in the uterus and pregnancy or delivery not be interfered with.

In the second case the woman was three or four months pregnant, trying to have a miscarriage. The fibroid so filled the pelvis that it could not be expelled. In this case he removed the fibroid and uterus with the dead ovum. A third case was one in which a large fibroid grew from the posterior wall of the cervix, and the woman, when he saw her, was in labor at full term. A Cesarean section was done in this case, and both mother and child saved. She was a comparatively young woman, and as he had some hopes that involution would have some effect on the fibroid he left it. But unfortunately within a year the fibroid increased in size, so that she was unable to pass urine. He was called again in haste, opened her abdomen, and did a hysterectomy. The next case was one in which the tumor was similar to that described by Dr. Howitt in his paper. The woman came to him when she was about four months pregnant. The cervix was lifted clear out of the pelvis, so that it could not be reached. The tumor extended down to the right broad ligament near to the vulvar orifice. It made such great pressure on the blood-vessels of the right leg that the limb was swollen to twice its normal size. A hysterectomy was done in this case. Hemorrhage was free, the operation was difficult, and in enucleating this tumor from without the pelvic cavity he accidentally wounded the rectum behind the vagina. He closed this with sutures and the woman got well without a fecal fistula.

Practically in every case of hysterectomy he did for fibroids he stitched the round ligaments to the stump of the cervix. This held the cervix up, kept the vagina at its normal length, and for all material purposes the vagina was as good as ever.

Myomectomy should be limited to those cases in which the fibroids were not numerous, and in which they could be easily enucleated.

DR. ROLAND B. SKEEL of Cleveland, Ohio, read a paper entitled
INTRAABDOMINAL TORSION OF THE GREAT OMENTUM WITHOUT
HERNIA.¹

DR. C. C. FREDERICK of Buffalo reported a case which occurred in his practice some ten or twelve years ago. He had not previously reported it. It was a little different from Dr. Skeel's cases, in that it consisted of torsion of an ovarian cyst and the omentum; on top of the ovarian cyst, about the size of a fetal head, the omentum had made adhesions, and with the torsion of the pedicle of the ovarian cyst there was likewise torsion of the omentum, with disturbance of the circulation in both. He operated on the case for one of suspected intestinal obstruction.

DR. EDWARD J. ILL of Newark, N. J., related two cases he had had in men over fifty years of age, who were stout, weighing over two hundred pounds each. One case occurred about eight years ago, during horseback exercise, and was taken for appendicitis. He operated on the man within twenty-four hours after he complained of symptoms, and removed the whole omentum. In the other case a portion of the omentum was about the size of half a hand. At the time it occurred to him to look up this subject in the old pathological anatomies, and he failed to find any record in the old books, such as Rokitansky, and he wondered then whether his patient would have gotten well without operation.

DR. SKEEL, in closing the discussion, said, among other things, that there had been altogether from seventy to seventy-five cases of torsion of the omentum reported of all sorts and descriptions. Twice the omentum cut the ovarian cyst in two portions by its tenseness. The majority of cases were associated with hernia.

DR. C. C. FREDERICK of Buffalo, N. Y., read a paper entitled

NYPHOMANIA AS A CAUSE OF EXCESSIVE VENERY.¹

DR. W. A. B. SELLMAN of Baltimore had had several cases, such as the essayist had spoken of, come under his observation. He had made a special effort to find out from the Superintendent of an institution for young women in regard to the prevalence of masturbation. He had discovered two cases. One was a nervous French girl, whose mother had decided erotic tendencies, and who, after her husband died, very soon was led to live a life of immorality. The girl was brought up amid such surroundings for a number of years, and then she entered this home. The Superintendent discovered that she was masturbating, and would have a number of young women in her room every night indulging in the same practice. The fact of having an individual of this character in the institution was very demoralizing. The institution soon rid itself of this girl and of others who had been under her instruction, or who had been her companions in criminality.

¹Papers will be published in this Journal for December.

DR. O. H. ELBRECHT had seen but one case of nymphomania, and that was in a little girl eight years of age. The father of the girl was divorced, and the mother had taught the child these practices. On examination he found the clitoris adherent. He did a nymphomectomy and removed the labia around the clitoris, but how much good this was going to do he did not know. At any rate, the girl had stopped the habit for four months. He thought it might become necessary to do a clitoridectomy.

DR. MONTGOMERY LINVILLE of Newcastle, Pa., related a case that came under his notice a few years ago. A young couple (husband about 30, and wife 27) consulted him, saying that it was impossible for them to enjoy sexual intercourse. After making an examination he discovered that the woman had no appearance of a vagina. After being married three months and living in the city of New York, a surgeon there attempted to manufacture a vagina, but made a failure. One could see a slight scar as the result of this operation. The speaker sent her to the hospital, operated, and discovered that the bladder rested on top of the rectum so that there were very few fibers of cellular tissue between them. With one finger in the rectum and a sound in the bladder, after a rather difficult dissection, he made a vagina, packed with gauze, kept the patient in bed for four weeks, flattering himself that he was going to have an excellent result. He allowed the patient to go home, and continued the packing with gauze, but in a week or ten days he discovered that the vagina had disappeared. When the woman was on her feet the packing would come down, and the raw surfaces would adhere. She was anxious to have another operation. He then had a wooden plug made, which was rounded on the end, applied a belt around the abdomen, with rubber tubing through the end of the plug. After he had applied this, and the woman had recovered sufficiently to get on her feet, she wore it for three months, with a splendid result.

In making the dissection in this case he was unable to discover any sign of a uterus, tubes, or ovaries, and still the woman had a strong sexual desire.

DR. JOHN A. LYONS of Chicago related a case that came under his observation in 1889 at the Post-Graduate Hospital, Chicago. The patient was unable to have intercourse through the natural channel for several years. A dissection was made, the perineum divided, and a glass tube, similar to a test tube, was introduced, and an excellent result was obtained. The woman was married, and her husband, finding out her condition, sought a divorce and obtained a decree on the ground that she was not properly sexed.

DR. ROBERT T. MORRIS said that in those cases in which the nymphomania was of central origin, nothing could be done. Cases of nymphomania due to preputial adhesions were common, and the surgeon could usually effect a complete cure if the moral sense was all right, and if delicacy was used. In choosing cases for operation he thought surgeons should rule out very carefully

those in which there was a neurotic or central origin for the disturbance. Circumcision or removal of the clitoris would cure a number of cases of nymphomania of central origin temporarily, just as they would cure epilepsy temporarily, but the effects of the operations were hardly over before the trouble returned.

DR. FREDERICK, in closing the discussion, said that where there was no hereditary predisposition, no neuropathic taint in the individual, removal of the local cause or causes would generally effect a cure. There was very little or no hope for those in whom the trouble was of mental origin. In a large proportion of cases nymphomania was an expression of sexual disease largely associated with psychopathic trouble.

DR. EDWARD J. ILL of Newark, N. J., read a paper on

CONSERVATIVE MEDICAL TREATMENT OF SALPINGITIS.¹

DR. ROBERT T. MORRIS of New York said there were a number of cases of gonorrhea in which the infection would disappear as a result of the natural resistance of the patient. When the practitioner had such cases he wanted to know how to help them out. He recalled one patient from whom he removed pus tubes, who developed gonorrheal septicemia, so-called gonorrheal rheumatism. The patient had stiff elbows, stiff spinal column, and stiff knees. He treated her for a year and could not get her well. He was sorry he had not taken out her uterus. She began treatment with some patent preparation (he did not know what it was), and in two weeks was well. There was surely something more to be done for these cases than surgeons had been doing for them.

DR. HERMAN E. HAYD said the essayist did not maintain that every case of acute trouble was going on to resolution; nor did he claim that many of them, sooner or later, would have to be operated on.² But what he wished the members to understand, and to impress upon them most forcibly was to try tentative measures first, and not subject these acutely sick women to immediate operation, and in so saying he thought the essayist had struck the keynote and had sounded a note of warning to every member present. The older surgeons became, and the more they operated, the more they were convinced that they had been operating too much, and had unsexed and mutilated altogether too many women. He was satisfied that the prophylactic measures recommended by the essayist in connection with the treatment of acute gonorrhea were excellent and the very best treatment that could be introduced. It was just as effective, probably more so than protargol, and the other nitrate of silver preparations, and it had the great advantage of not destroying all of the underclothing of women. If one was not exceedingly careful, no matter how the napkins were applied, the underclothing of the patient was going to be injured and spoiled by the application of silver preparations. It was good practice to dilate a contracted, pinhole

¹Paper will be published in this Journal for December.

os when there was acute gonorrhea of the vagina, although ordinarily he would deprecate such a practice, with the expectation that the traumatism associated with the dilatation might invite quick invasion of the uterus, and perhaps of the tubes and ovaries as well.

DR. WILLIAM H. HUMISTON said that while he was not familiar with some of the details of Dr. Ill's method of treatment of these conditions, he was obtaining equally good results from a method he began to practice about five or six years ago. If cases of acute gonorrhea in women came to the gynecologist sufficiently early, he could undoubtedly establish an abortive treatment with excellent results. If a woman, who had a sudden onset of a discharge which was irritating and uncomfortable, would consult a physician immediately, in nine cases out of ten the gynecologist would obtain excellent results from the abortive treatment of gonorrhea. His method of treating cases of acute gonorrhea early was to put them to bed, to thoroughly cleanse the vulva and vagina, and even in these one would find little or no discharge or infection of the cervical canal. If delayed for two or three days, infection of the cervical canal would be found. By cleansing the vagina thoroughly, under distention, separating every fold, using a strong solution of bichloride of mercury and swabbing it thoroughly out, drying the surfaces and the little eroded spots, and touching them with a preparation of silver, one could cure these cases. The silver preparation did not run over portions of the vagina that had not become affected. Then the entire vagina should be dusted with boracic acid powder, seven parts of boracic acid to one part of iodoform, and the vagina packed full with iodoform gauze up to the point of distention, and then the bacterial oven was destroyed.

DR. C. C. FREDERICK did not recall having performed an abdominal section for a case of acute gonorrheal salpingitis and pelvic peritonitis except in one instance. He early learned this from the case of a woman who had gonorrhea. He wanted to operate on her; she objected strenuously, and so did her husband, and she got well without operation. Whenever possible, conservative measures should be resorted to in these cases.

DR. W. A. B. SELLMAN agreed with the previous speakers in regard to the non-operative treatment of these cases. He did not think any case should be operated on unless general peritonitis had developed. His practice in treating cases of gonorrhea was to paint the vault of the vagina with the strongest iodine he could get, that is, the officinal tincture. For the relief of pain in these cases, which was usually severe, he resorted to the old-fashioned turpentine stupe. As a tampon he used from twenty-five to thirty thicknesses of gauze. His nurses made these up in quantities.

DR. ROLAND E. SKEEL said there were several questions that occurred to him during the reading of the paper, but most of them had been answered by the remarks of Dr. Frederick. He referred to gonorrheal salpingitis as distinguished from pelvic inflamma-

tion due to pyogenic infection. He had not heard for a long time anybody advocate operation in the acute stage of gonorrheal salpingitis as distinguished from acute infection, due to abortion, or post-partum infection.

He asked whether the essayist had not seen trouble from dilatation and washing out or making applications to the interior of the uterus, as a prophylactic measure in salpingitis, and whether there was not some risk of introducing infection into the interior of the uterus and of carrying infection which was not there, because it had been his experience that the moment gonococci appeared in the interior of the uterus, they likewise appeared in the tubes. When applications were made to the interior of the uterus very early, the trouble was getting well. He understood the essayist to say that gonorrheal salpingitis was recovered from spontaneously. He would like to have him, in his reply, state whether he had ever seen gonorrheal pyosalpinx recover from any method of treatment outside of extirpation.

DR. JOHN E. CANNADAY of Hansford, W. Va., said he had had occasion to open a good many abdomens after the removal of pus from the tubes, and had been surprised to notice the number of cases in which the tubes had been entirely restored to normal, with the exception of a few adhesions which had twisted them about in various ways. There were two classes of terminations in these cases. In one there was absolute resolution of the tube, in that it was restored to normal, with the exception of the formation of a few adhesions. In the other cases the adhesions were dense; the tubes were practically destroyed or obliterated, so that removal became difficult. The ciliated epithelium was completely destroyed, so that they were absolutely functionless. The ovaries were degenerated.

DR. O. H. ELBRECHT said that in all the cases that came to the hospital of which he had charge, the secretions were examined for gonococci. In a case in which the uterus and tubes were infected, he had yet to see one instance where the gonococci had disappeared inside of several years. Of course, one would find a great variety of bacteria, but gonococci did not disappear as rapidly from the secretions as was supposed. True, their virulence was decreased; they were not progressive, but they were present just the same. He heartily coincided with the conservative treatment recommended by the essayist in properly selected cases.

DR. ILL., in closing the discussion, said that the application of ice must be entirely controlled by the temperature. If the patient had a temperature above 101° ice was all right. With reference to the remarks of Dr. Skeel, he believed that tubal abscess could get entirely well. He had felt many a time the convoluted tube which undoubtedly contained pus without opening the abdomen, which had been gradually drained through the uterus. He had many times endeavored to reproduce the gonococcus in a patient, after he thought she was well, by the application of a stick of nitrate of silver, and, if any gonococci were about, this would stir

them up again, but he had not succeeded. When a patient had quite recovered from the disease there might be gonococci lurking there, and if one used some irritant, which would produce an inflammatory condition, like a bit of nitrate of silver, fastened on to a probe and introduced into the urethra or cervix, he might have a new culture of gonococci, but if he did not he could be reasonably sure that there were no gonococci present.

DR. JAMES E. SADLIER of Poughkeepsie, N. Y., read a paper entitled

CONSISTENCY IN ASEPTIC SURGICAL TECHNIQUE.¹

DR. MILES F. PORTER of Fort Wayne, Indiana, read a paper on

DECIDUA MALIGNUM.¹

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, followed with a paper entitled

AN UNUSUALLY LARGE DERMOID TUMOR OF THE OVARY.¹

DR. JOHN A. LYONS of Chicago mentioned a case in which he assisted at the operation, the contents of the tumor and all weighing about forty-two pounds. The patient died.

DR. H. W. LONGYEAR of Detroit said that at one time, in one year, he had the good fortune to operate upon a number of these cases, but since then had only seen one. In this case the tumor was situated in the anterior wall of the uterus, it being just above and to the right.

DR. ROBERT T. MORRIS said that some years ago he took great pains to exclude the fluid contents of these tumors from the peritoneal cavity, and spent much time in getting the fluid out after it got in, as some of these cysts would rupture. Of late years he had made it a rule to spend very little time in getting fluids out of the peritoneal cavity unless the case happened to be one of acute infection at the time of the operation. It seemed to him these fluids were quite benign unless they happened to carry sebaceous material, hairs, or some of the harder embryonic elements.

DR. HUMISTON, in closing the discussion, said it was easy to prevent the escape of fluid into the abdomen in this case, because the incision was very large. The contents of the tumor were drawn off without contaminating the abdominal cavity.

DR. HERMAN E. HAYD of Buffalo, N. Y., read a paper entitled
ECHINOCOCCUS CYST OF THE LIVER SUCCESSFULLY OPERATED ON,¹
WITH EXHIBITION OF THE SPECIMEN.

DR. EDWARD J. ILL said that his earliest experience with such cysts was when he was a medical student. This case showed the wisdom of not putting a needle into the tumor. During the first year of medical work as a student, he witnessed at the hospital the introduction of an aspirating needle into a cyst for the pur-

¹Papers will be published in this Journal for December.

pose of making a diagnosis of tumor of the liver. The surgeon withdrew some of the fluid and said the case looked like one of abscess of the liver. The next day he opened the abscess and got a tremendous hemorrhage, and the patient died the following night. At the postmortem it was shown that the liver was of large size and filled with little cavities. Each cavity was lined with a hyaline membrane, and nobody seemed to know what it was. He took the liver home and stored it away, thinking that some day he would find out what it was. Five years afterwards (this was in 1878) he was working with Professor Prudden in his laboratory and showed him sections of this liver. He did not know what it was. He asked Dr. Delafield to look at it, and these gentlemen, after guessing what it was, picked up Virchow's Pathological Anatomy, and found that this was the first case of multilocular cysticercus of the liver they had ever seen. The case was afterwards described in Delafield and Prudden's Pathological Anatomy.

DR. MORRIS asked whether there were any daughter cells in evidence.

DR. ILL replied, no.

DR. HOWARD W. LONGYEAR of Detroit read a paper entitled

NEPHROCOLOPEXY, WITH REPORT OF CASES.¹

OFFICERS.

The following officers were elected for the ensuing year: *President*, Dr. E. Gustave Zinke of Cincinnati, Ohio; *Vice-Presidents*, Dr. John W. Keefe of Providence, Rhode Island, and Dr. W. A. B. Sellman of Baltimore, Maryland; *Secretary*, Dr. Wm. Warren Potter of Buffalo, New York, reelected; *Treasurer*, Dr. X. O. Werder of Pittsburg, Pennsylvania, reelected.

Baltimore, Maryland, was chosen as the place for holding the next annual meeting; time, September 22, 23, and 24, 1908.

CORRESPONDENCE.

OPERATION FOR ABSENT VAGINA.

A QUESTION OF PRIORITY.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS:

DEAR SIR:—In your issue of May, 1907, page 714, under Current Literature, you refer to an article by Haberlin (*Zent. f. Gyn.*, March 2, 1907), in which he describes a proposed operation for the formation of an artificial vagina by taking a piece of intestine for this purpose. Your translator seemed to get the idea that Haberlin had already operated upon a case, but careful perusal of the original shows that such was not the case, but that a case for

¹Paper will be published in this Journal for December.

operation had presented itself, but had not been operated upon.

Precisely this same method of forming an artificial vagina I suggested in the *Annals of Surgery* of September, 1904. Before making this contribution I had had an expert go through the library of the Surgeon-General at Washington to see if anyone had preceded me along this line, and I had thus learned that my suggestion was entirely new.

After noting your brief account of his method, I wrote to Dr. Haberlin, sending him a copy of my article, and also wrote to the journal in which his article had appeared. Dr. Haberlin replied promptly, acknowledging my priority, and not denying that he had seen my article, but refusing to make any correction in his implied claim to priority. The journal in which his article appeared has thus far paid no attention to my communication. (In a recent conversation with Dr. C. E. Morris, I find that this apparent lack of courtesy is not unusual "in Germany.")

At the last meeting of the American Association of Obstetricians and Gynecologists I reported a case in which I had carried out the technique suggested for the construction of an artificial vagina with absolutely satisfactory results. This case will be reported in due time. It is evident, I think, therefore, that I may claim priority both as to suggestion of the method of operating, and also in its execution.

J. F. BALDWIN.

COLUMBUS, OHIO, September 28, 1907.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Bad Habits in Children.—John Thomson (*Arch. of Ped.*, March, 1907) says that the treatment of pica or dirt-eating includes correction of digestive disorders, improvement of the general health, keeping the child away from the substances for which he has a morbid craving, and change of surroundings with new interests. Wetting the hands is a difficult habit to check. In treating nail-biting the finger nails should be kept cut short. To stop sucking of the thumb, fingers, or other part of the body, mechanical treatment is of value. A light splint should be applied to prevent bending the elbow if the fingers are sucked. The part sucked may be anointed with aloes or quinine. Tongue-sucking is difficult if not impossible to stop until the child reaches years of discretion. It is a characteristic symptom of mongolism. Some of the rhythmical movements are bad habits, though others are neuroses. They include head-banging, head-rolling, head-nodding, and rocking of the trunk forward and backward. A child who is commencing to practice these should be made to stand up and run about whenever they begin. The treatment of masturba-

tion requires removal of any local irritation present, attention to general health, mechanical prevention by splints to hold the arms or separate the thighs, constant watching, and keeping the child's thoughts off the habit. It is, of course, right that the child should feel the parents' or nurse's disapproval. Much punishment, however, and especially much talking to, often do very great harm by accentuating the importance of the subject and making the child think too much about it. A complete change of surroundings and of subjects of thought is a strong influence for good in the treatment of all these cases.

Anemia Infantum Pseudoleukemia.—Henry Koplik (*Arch. of Ped.*, March, 1907) says that a study of the post-mortem findings of all the cases of Von Jaksch anemia published thus far, including nine observed by the author, emphasizes the view that there is nothing pathognomonic in the anatomical changes in the spleen, in the bone marrow, liver, and other organs. In the spleen there has been regularly found an enlarged organ with an increase of connective tissue, a diminution of the splenic pulp, with nothing even remotely suggestive of leukemia. In the liver there has been an enlargement due to simple parenchymatous changes, or to the fatty degeneration or simple lymphoid infiltration. A study of the bone marrow gives at most a mixed red marrow and its constituents. There is nothing suggestive of leukemia, or a very marked disturbance in the structure, which could be designated as specific. A study of the intestine also fails to show anything but lymphoid infiltration. The anemic habitus, the tumored abdomen, the large spleen of enormous size, the increased size of the liver, the intestinal disturbances, easily enable us to recognize such cases apart from the cases of slight anemia, with moderate enlargement of the spleen. There is nothing, however, in these cases which suggests leukemia, except it be the large liver and spleen. The course of some of these cases resulting in complete and satisfactory recovery certainly impresses the writer with the fact that the condition is one of a severe disturbance of the nutritive functions of certain organs, such as the intestine, and its large secretive glandular system, reacting upon certain organs, such as the spleen, causing changes in the same, with secondary changes in the blood, which may assume a rôle of primary importance. Von Jaksch's anemia is, therefore, a severe secondary anemia, with or without marked leucocytosis. Those cases which have been reported as terminating in true leukemia were really cases of leukemia from the outset. Cases of true Von Jaksch disease, if they terminate fatally, do so through some intercurrent disease, such as pneumonia or tuberculosis, to which they fall easy victims. Improvement can result only when we have succeeded in improving the general nutrition of the patient by a careful regulation of the intestinal processes. When the foul-smelling and abnormal movements become normal in color and consistency, general improvement, both of the physical state and that of the blood, results.

Protection of Rheumatic Children.—C. O. Hawthorne (*Brit. Jour. Child Dis.*, March, 1907) calls attention to the fact that while in the adult acute rheumatism expresses itself largely as an acute polyarthritis, in the child it occurs mainly in non-arthritic forms, and that with each and all of these, and more especially with the non-arthritic manifestations, rheumatic heart disease is a possible incident. The protection of these children demands not less than the same measure of rest which the disease itself compels in the acute polyarthritis of the adult. He believes that the discovery of signs or evidences of rheumatic disease in any family ought to be the occasion, as an imperative professional duty, to convey to the parents information and warning of the special risks which even the apparently slight illnesses of their children may involve, and of the importance of complete rest as a means of avoiding these risks.

Albuminuria in the Course of Impetigo and Impetigenous Eczema in Children.—W. B. Auchincloss (*Jour. de Méd. de Bordeaux*, May 5, 1907) says that fortunately albuminuria in the course of purulent skin diseases is rare. The author describes two cases observed by himself in which in the course of impetigenous eczema albuminuria was present. The pathogenesis of this albuminuria is the most important consideration. Several theories have been invoked to account for the condition of the kidneys. The theory of infection is the only really plausible one. Infection may act in different ways. Toxins elaborated by the bacteria, which are carried by the circulation to the kidneys, may irritate the epithelium and produce a nephritis. Or the bacteria may break down the lymphatic barrier and penetrate the circulation, being carried to the kidneys themselves. Or both these actions may be combined. Streptococci may then be found in the circulation and in the kidneys.

Cystitis in Nurslings.—Giuseppe Caccia (*Riv. di Clin. Ped.*, April, 1907), after observing fifteen cases of cystitis in nurslings, describes the condition as rather frequent. He believes that it is not generally diagnosticated, but the symptoms are confused with the same ones appearing in cases of gastrointestinal diseases. They are fever, pain, and turbid, acid urine, full of bacteria and agglutinated leukocytes, odorless and containing little albumin. The causes in general are the same as in adults. It may be caused by the presence of various bacteria, among which the most interesting and important is the colon bacillus. This may come by ascending infection, in females from the vagina, in males on account of a phimosis. Of the author's six male cases all had phimosis, which caused secretions and bacteria to be retained. The author discards the theory of the germs coming through the walls of the colon, and considers that the disease is rarely hematogenous or descending. The most satisfactory treatment is by urotropin or helmitol, and a cure will be obtained generally without washing out the bladder. The prognosis, even in untreated cases, is good, as the disease usually ends in a cure.

Paraganglin of Vassale in the Treatment of Pertussis.—F. Valagussa (*Riv. di Clin. Ped.*, April, 1907) has made use of the paraganglin of Vassale in thirty-four cases of pertussis, of which nineteen were treated from the beginning of the disease, seven began treatment at the first spasmodic cough, and the remainder at a later period. The author was led to its use by the fact that a child treated with it for habitual constipation, during the time that pertussis was present in a sister, had a very light attack of the latter disease, while that of the sister was severe. He then tried it in other patients with excellent results. Paraganglin is a proprietary extract from the suprarenal glands. It gives relief to the spasms of whooping-cough, making them less severe, less frequent, and shorter. It is only a symptomatic and not a specific remedy. When given in the latter part of the disease it soon stops the paroxysms. The dose varies with the age; it should be given in small doses, frequently repeated, and without interruption. There are no bad effects.

The Cry of the Nursing Infant.—G. Garriere (*Rev. Fran. de Méd. et Chir.*, April 25, 1907) says that children rarely cry without cause, and by the cry one can recognize whether it is from some external or an internal cause. The most frequent cry is that of hunger; the next that of pain; a search for some cause will reveal a pin or some such cause. Dentition is the cause when the child grinds his gums and they are seen to be red. Rarely one will find children that are natural criers. Internal causes include erythema of the buttocks, suppuration of the cord, or the mammary glands, and bony affections, such as fractures, luxations, periostitis, or ostitis. Acute adenitis and torticollis are affections of the neck that cause pain. Stomatitis or angina are other causes. Gastrointestinal causes are many. Dyspepsia is accompanied by vomiting. Hyperchlorhydria comes after nursing and is relieved by lactation. Hypochlorhydria comes at the end of digestion. Dilatation of the stomach is shown by copious vomiting at the end of digestion. Enteritis and intestinal dyspepsia, with colic, are frequent causes of crying. Other causes are intestinal worms and strangulated hernia. Having examined into all these causes phimosis or erosions of the vulva may be sought. Vesical spasms and nephritic colic may occur. Next search for ear troubles, peritonitis and meningitis with hydrocephalus. There are many serious pathological conditions to be eliminated before one can say that the infant has no cause for crying.

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THE AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

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No. 6

ORIGINAL COMMUNICATIONS.

THE BEST METHOD OF TEACHING GYNECOLOGY.*

BY

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New York.

Professor of Diseases of Women, New York Post-Graduate Medical School.

WHEN our forefathers braved the terrors of the Atlantic Ocean in their frail crafts and the dangers of a vast wilderness with their crude arms to escape to that wilderness to freedom from religious persecution and the tyrannies of monarchies, and when they found finally that even the broad expanse of the ocean and the depths of the wilderness could be no bar to them, they rebelled and founded and established this government, whose chief principle should be the preservation of the largest amount of liberty to each individual, consistent with the general good.

With this fundamental principle, each State had its own government, its own law-making powers; each State was divided into counties and precincts, with their smaller governments, and to each individual was preserved the greatest amount of liberty possible, consistent with the welfare of the community. And all solidified into one body, held together and controlled by a body of laws called the Constitution. In such a system it was inevitable that long time and experience should be required to define that variable quantity, "the greatest amount of liberty consistent with

*Read before the New York Obstetrical Society, October 8, 1907.

the welfare of the community," and it is this lack of definite bounds which is resulting in certain glaring defects in our system, which are thrusting themselves more prominently forward as our population and our power increase.

Our President is now making a strong effort to deal with some of these evils; for instance, those defects relating to commercial traffic. Another most serious evil which is a menace to society is caused by the laws concerning marriage and divorce. Each State, with its large liberty, legislates upon marriage and divorce, and thus we have our polyglot laws relating to the most fundamental bulwark of society.

Again, in regard to the practice of medicine, the laws regarding the qualifications vary with the States. There is no uniformity, some communities allowing any individual who desires to do so to practice the healing art, thus preserving to the individual the right to enter into this calling without regard to qualification. Is this "consistent with the public welfare?" It is the attempt to define this relation of practice of medicine to the general welfare which concerns us most intimately, and it is a problem with which we are struggling, and one in which we are gaining point by point, and which is still far from a satisfactory solution.

One of the most serious defects in medical education under our system is that the candidate for a degree does not have to serve a hospital internship before obtaining it. The result of the internship being optional with the man after obtaining his degree is that only the more ambitious, conscientious, or energetic men have such service, but a large proportion having neither opportunity nor inclination are turned loose half-baked, wanting in the most important detail of their medical education, with the privilege of practicing medicine. It is thus that the post-graduate schools are compelled to devote a considerable part of their energies to instruction which should already have been obtained by the matriculate while an undergraduate.

It seems to me that our medical education should be reorganized under a different system which would involve the union of medical colleges into a medical university under the control of the State. The State might then assign to public hospitals according to the number of their beds a certain proportion of medical students in their fifth year, and by placing certain skilled work now done by nurses in the hands of the medical students in their last year, such as taking pulses and temperatures, massage, hydro-

therapy, electrotherapeutics, etc., the hospitals might diminish the number of nurses, greatly increase the number of internes, and carry out useful forms of treatment which under our present system are almost neglected.

We should strive to remove medical education as far as possible from the miserable condition of dependence on private charities, and place it under State control and support. There can surely be no more important subject to a State than its public health and hygiene. The State already controls the hospitals for the insane and many public charities. It enters into the control of hospitals and clinics, in that it demands their incorporation, and it should by all means go a few steps further and take control of medical education.

Our forefathers, who were most enthusiastic in their advocacy of individual liberty, never secured to a man the right to kill his fellow man except in self defence, but those who advocate on the ground of personal liberty the right of the unqualified to practice medicine are certainly permitting certain persons to slaughter innocent inhabitants of those communities.

Under our present system the need and usefulness of post-graduate schools is enormous. In a community where the medical education is of the best, the function of the post-graduate school is simplified and its usefulness broad. It consists in bringing before graduates the latest procedures and refreshing their minds on the most improved methods of diagnosis and treatment, and of giving men who desire to become specialists that opportunity. It is of this proper sphere of post-graduate instruction that I shall speak.

I trust that I may be pardoned if I say that at the Post-Graduate Medical School of New York we have followed out what we consider to be the ideal conception of post-graduate instruction in gynecology. Hence to describe what we do in gynecology is to describe my idea of how gynecology should be taught to the graduate. I shall take the liberty of outlining the gynecological work in that institution. This consists in five divisions, four of which belong in the department of gynecology, and one in that of work upon the cadaver. Beginning with the last mentioned, it is divided into two departments, one a school of anatomy, and the other operative gynecology on the cadaver. In the first the student may make dissections of the parts relating to this specialty. In the second he has quite a complete course of operations upon the cadaver.

The second great division of the work comprises that upon the living subject. This, for convenience of description and according to the work, is divided into four subjects.

First.—Classes in gynecological diagnosis. Class A, a class for male matriculates; Class B, a class for female matriculates. In these classes not more than four students are permitted to work with the chiefs of the clinics, where they are in turn allowed to examine, and are carefully instructed in methods of examination of the patients. The class for male matriculates is presided over by a man, and that for females by a woman instructor.

Second.—Minor gynecological surgery on the living subject. The scope of this branch is self-explanatory. The general plan of teaching is as follows: The class consists of three matriculates and a course constitutes nine lessons. Each matriculate performs three operations and each assists in six. An assistant aids the instructor in watching the details. The students have the fact borne in upon them that in this work the first demand is the cure of the patient. The most careful attention to the minute details of asepsis is observed. If at any stage of the operation the interests of the patient appear in any way to be jeopardized, the student yields place to the instructor, but continues the work by being first assistant. The students pass the instruments and sponge. Each operation is preceded by a brief succinct lecture on the case in hand, dwelling especially on minute details of work. If a student shows lack of skill in handling instruments or tying ligatures or suturing, he is told how to practice this on inanimate objects in order to cultivate his manual dexterity. Only patients who present themselves at the clinics are operated on in these classes, but the results are not inferior to my own best results, because the work is practically that of the instructor. In teaching I am exceedingly careful not to confuse the mind of the student by presenting a multitude of operations to him, but select what I deem to be the best procedure in each case, and confine the instructions to this.

Third.—Major operative gynecology. This class is open to two matriculates only, who are subject to the selection of their instructor and are chosen only from among those who have already had one of the classes in minor operative surgery, or gynecology on the living subject.

Fourth.—The general lecture. Such a lecture as I shall describe occurs every week day lasting from 9 to 11 A.M. My own lec-

ture is on Thursday morning. It is open to any matriculate who has a general ticket, or who is taking this subject alone. The material is assembled from four clinics, each of which meets twice a week, and each of which is conducted by an instructor and a clinical assistant. All new cases which belong to this department are requested to present themselves on this morning, when all are examined by me. Those which would best serve for instruction are brought before the class and used as subjects for the lecture, and are examined by a small section of the matriculates under the supervision of an instructor. On this morning cases are selected for operation, and all the instructors are advised what treatment should be followed. Occasionally, of course, patients are ordered to report again for observation. I usually begin my lecture by an operation which will not consume too much time and will be most useful. In each lecture I try to focus upon some one or more points which will be of especial value to the students and place the lesson in such a light that it cannot be forgotten. Finally, students are given the privilege of seeing the patients in the ward. The above is a general outline of the method which I pursue at the Post-Graduate Medical School, and is the one which I consider to be the best for teaching gynecology to the graduate. I have dealt with this subject briefly, since the time allotted to me is short. I would fail entirely of my purpose in reading this paper, however, if I did not include in it a plea to every member of this influential body of men to work for the advancement of medical education. Let the undergraduate schools work for that completeness which they should attain and let them leave to the Post-Graduate Schools their legitimate field of work, and let each and everyone of us cooperate with the other for the good of mankind.

71 WEST FORTY-NINTH STREET.

HOW TO TEACH DIAGNOSIS IN DISEASES OF WOMEN.*

BY

J. RIDDLE GOFFE, M.D.,

New York.

Surgeon to the Woman's Hospital, Professor of Gynecology at the New York Polyclinic.

(With six illustrations.)

Introductory Remarks.—We all recognize that in every department of medicine the foundation of our work is diagnosis. Without a proper diagnosis we are helpless. And so it becomes necessary in gynecology to make a diagnosis—not a haphazard, slipshod, incomplete or absolutely erroneous diagnosis founded on a guess from the history of the case—but a clear and sure knowledge of the exact conditions in the pelvis, made, as far as possible, without reference to the patient's history and viewed from a purely objective standpoint.

I have always felt that, in the matter of diagnosis and treatment, the keenest knowledge as to what is pathological and what is normal, and the keenest conscience as to what requires interference and what should be let alone, are demanded in our specialty more than in any other department of medicine. A woman knows comparatively nothing about her generative organs and has great difficulty even in locating accurately the seat of pain. She has a vague idea that all her ailments come from some womb trouble. She has no means of verifying what the doctor tells her and therefore must perforce place herself implicitly in his hands and accept his statements. When she places herself in the hands of a gynecologist she submits to him not only the most delicate confidences of her life but also the most delicate part of her anatomy for his consideration and judgment. In other departments of medicine a man's diagnosis is more likely to be submitted to his fellow practitioners for approval or condemnation. With us it is less so because the woman hesitates to subject herself to repeated examinations, at the hands of different men. It is not only necessary to make an exact diag-

*Read before the New York Obstetrical Society, October 8, 1907.

nosis of the condition, but it also falls upon the medical attendant to make a careful judgment of the importance of the lesions found, and the relation they may bear to the general condition of the patient. It is a trite remark to say, do not treat the



Fig. 1.—Correct position of examiner.

disease, but treat the patient. Nevertheless it is a thing to be borne in mind; that is, it is the patient who is to be restored to health, and not alone an ovary or a uterus to be removed. In this connection it must not be forgotten that the genital organs of women do not constitute the entire woman. There are other

troubles from which she may suffer producing symptoms quite identical with those resulting from lesions in the pelvis. Here, too, one must have careful judgment.

Goodell in that classic introduction to Keating and Coe's "Gynecology," which, unfortunately, is now out of print and so does not come to the notice of the younger generation of medical men, has presented so clearly and so forcibly this phase of the subject that I am sure you will pardon me if I read a brief extract:

"Nerve-strain, or nerve-exhaustion, comes largely from the frets, the griefs, the jealousies, the worries, the bustles, the cares and cares of life. Yet, strangely enough, the most common symptoms of this form of nerve disorder in women are the very ones which lay-tradition and dogmatic empiricism attribute to ailments of the womb. They are, in the usual order of their frequency, great weariness and more or less nervousness and wakefulness, inability to walk any distance, and a bearing-down feeling; then headache, napeache, and backache. Next come scanty, or painful, or delayed, or suppressed menstruation, cold feet and irritable bladder; general spinal and pelvic soreness and pain in one ovary, usually the left, or in both ovaries. The sense of exhaustion is a remarkable one: the woman is always tired; she spends the day tired, she goes to bed tired, and she wakes up tired—often, indeed, more tired than when she fell asleep. She sighs a great deal; she has low spirits and she often fancies that she will lose her mind. Her arms and legs become numb so frequently that she fears palsy or paralysis. Nor does the skin escape the general sympathy. It becomes dry, harsh, and scurfy, and pigmentary deposits appear under the eyes, around the nipples, and in the chin and forehead. The symptom-group of nervous exhaustion—anemia, backache, bearing-down, difficult walking, ovarian pain, and menstrual disorders—although often without the least gynecological significance, is usually the signal for a gynecological diagnosis. Any pelvic organ showing the slightest irregularity is singled out as the culprit and promptly placed on trial. Endless injurious local treatment and grave surgical operations may now cause the woman to suffer many things from many physicians. If no tangible disorder of the sexual organs be discoverable, the invisible endometrium or ovaries must take the blame and receive the local treatment. Whatever the inlook or the outlook, a local treatment, more or

less severe, is liable to be the issue. Yet these very exacting symptoms may be due wholly to nerve-strain, or what is synonymous, to loss of brain-control over the lower nerve-centers, and not to direct or reflex action from some supposed uterine disorder. Neither, for that matter, may they come from some real, tangible, and visible uterine lesion which positively exists. Thus it happens that a harmless antelexion, a trifling leucorrhœa, a slight displacement of the womb, a small tear in the cervix, an insignificant rent of the perineum, or, what is almost always

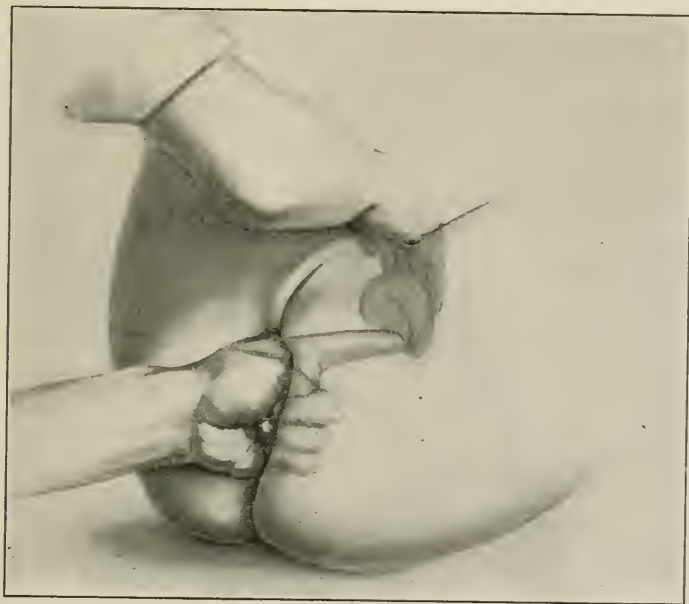


Fig. 2.—Securing the uterus between the two hands; showing the palm of the examining hand.

present, an ovarian ache, each plays the part of the will-o'-the-wisp to allure the physician from the bottom factor. To these paltry lesions—because they are visible, palpable, and ponderable, and because he has by education and by tradition a uterine bias—he attributes all his patient's troubles; whereas a greater and subtler force, the invisible, impalpable, and imponderable nervous system, may be the sole delinquent. The sufferer may be a jilted maiden, a bereaved mother, a grieving widow, or a neglected wife, and all her uterine symptoms—yes, every one of them—may be the outcome of her sorrows and not her local lesions.

She is suffering from a sore brain, and not from a sore womb.²

Following out this line of thought, it is well to remember that in spite of the ever present insinuation that medicine is not an exact science, there are certain organs in the body the organic condition of which a reasonably equipped physician is able to investigate and positively know. These are the heart, the lungs, and the kidneys. It is inexcusable for any man to treat a patient for any trouble whatsoever until he knows the exact condition of these three organs. It follows from this that it should be the routine custom of every physician to examine carefully these organs as a preliminary step to the treatment of every patient that falls into his hands.

Compared with the three organs just mentioned the abdominal and pelvic cavities are a *terra incognita*. Nevertheless, before proceeding to the pelvic cavity the abdomen should be exposed and thoroughly palpated. As special points of investigation here, are the liver, the gall-bladder and its ducts, the kidneys, the appendix, and also as a possibility to be ever present before the mind, various forms of ptoses, as of the stomach or large intestine, and all forms of tumor. Here, at once, is conspicuously brought into play the special sense of touch known as the *tactus eruditus*.

The *tactus eruditus* has been so thoroughly misunderstood that perhaps I may be pardoned a word in its explanation. The general impression seems to be that it consists in a peculiarly sensitive condition of the tactile corpuscles in the index finger of the gynecologist due to long and careful cultivation. This is a great error. This accomplishment does not reside in the finger, but in the brain, and is that faculty of the mind which consists in making a mental picture of what the sense of touch conveys to it. It is known also as the scientific imagination. By its cultivation it reaches its highest perfection in the blind. The blind are said to see what they can feel, and, in all respects except that of color, get as clear a picture in the mind as the man who uses his eyes. This scientific imagination is of great value to the surgeon not only in enabling him to see what there is in the abdomen, but also in complicated operations to enable him to preserve the proper relations of parts and tissues.

Coming now to the more immediate field of the generative organs of women, in the examination of the external organs and also the vagina and cervix, the senses of touch and sight are both

employed. The condition of the remaining internal organs can only be ascertained by the *tactus eruditus*. The chief points to be investigated are the positions of the fundus, ovaries, and Fallopian tubes, their dimensions and consistencies.

Scheme of Diagnosis.—In my early experience in giving a touch course I found that the student was all at sea when he came to pass his finger into the vagina. There were no recognized points or base lines from which direction could be indicated. There was really no nomenclature by means of which I could indi-

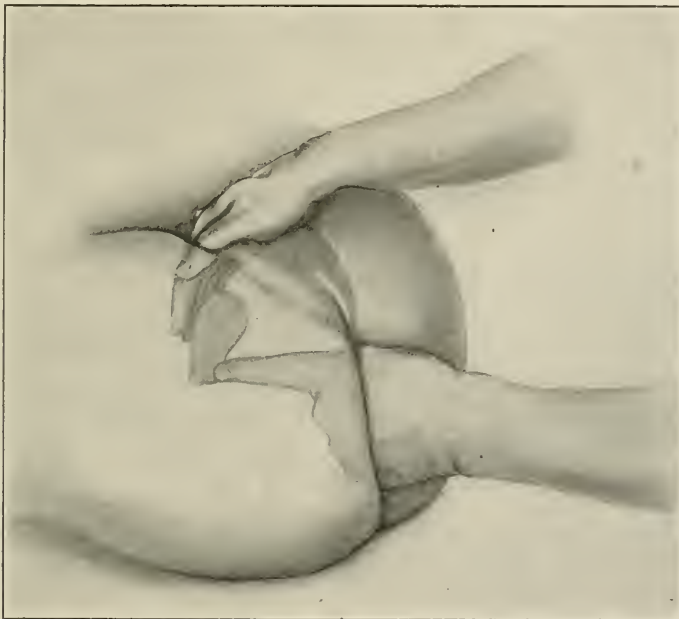


Fig. 3.—Showing the back of the examining hand; cervix and fundus in normal position.

cate to the student what to look for or how to proceed systematically and so gain his knowledge in a progressive way starting with what his finger first came in contact with and so proceeding to the end. The only means of communicating my thought to the student, or for the student to ask questions with any degree of intelligence, was to constantly refer to the charts and place the finger upon it in various directions.

Out of my strenuous efforts during the first year or two as a teacher of diagnosis I gradually evolved a scheme which quickly

demonstrated its merits in enabling the student to use his scientific imagination and follow his finger as it came in contact with the various parts. The greater the detail and the more carefully it was insisted upon the more promptly the student acquired the *tactus eruditus*, and I found that by following this scheme the student could learn as much in two lessons as he formerly acquired in twelve; it gave him something definite to fix his mind upon and an orderly course of acquiring his information.

First, then, let us consider the position of the fundus. This is a matter of direction; and before we can determine direction we must have a fixed line of departure, that is, a base line with which to compare all directions. As a base line I have selected the axis of the vagina. Now, if the finger is passed straight into the vagina it lies in the axis and therefore we are comparing direction with the finger. In order that the finger may be passed uniformly in the same direction, the forearm and the finger must be kept in one continuous straight line and parallel with the top of the table on which the patient lies. With these points clearly in mind, I find that as far as the position of the cervix is concerned all cases can be classified under two headings: First, cervix perpendicular to the axis of the vagina; second, cervix parallel to the axis of the vagina. From the position of the cervix the position of the fundus can be very positively inferred; that is, if the cervix is perpendicular to the axis of the vagina and pointing posteriorly, *i.e.* in normal position, the fundus will be anterior or in normal position. If the cervix is parallel to the axis of the vagina, a pathological condition is always present and the fundus will be in one of three places: anteflexed, retroflexed, or retroverted.

The cervix will not always be found exactly perpendicular or exactly parallel to the axis of the vagina, so that in order to classify it one must place it in accordance with the position to which it more nearly conforms. To determine this point there are three tests to which the direction of the cervix is put, *i.e.* three questions the examiner must ask himself, as follows: 1st. How does the finger approach the anterior lip of the cervix? 2nd. How does it approach the external os? and 3d. How does it approach the posterior fornix? (By posterior fornix is meant the point where the posterior vaginal wall is attached to the cervix.) The answers to these questions will be as follows: 1st. If the cervix is perpendicular to the axis of the vagina the finger

will approach the anterior lip perpendicular to it. 2nd. It will approach the external os in such a way that the os will be felt on the side or ball of the finger; and 3d. It cannot reach the posterior fornix if the finger is kept straight, without lifting the cervix unduly. If the cervix lies parallel or in the axis of the vagina, the answers will be as follows: 1st. The finger will be parallel to the anterior lip; 2nd. the finger will come end on into the external os; and 3d. it will readily reach the posterior fornix, being parallel to the posterior lip of the cervix. The finger can be swept around the cervix, being parallel to it at every point.

It is important in instructing students in diagnosis to insist



Fig. 4.—Cervix in the axis of the vagina; fundus retroverted.

upon the minutest detail of this scheme because it enables them to build up the mental picture of the contents of the pelvis and so cultivate the *tactus eruditus*.

I prefer to examine with one finger rather than two. The fact that the middle finger projects half an inch beyond the index does not necessarily enable the examiner to reacher further into the pelvis for the reason that the ring finger cannot be bent at a right angle to the middle finger and by the extended knuckle when bent it takes off as much from the proximal end of the middle finger as the latter projects beyond the index. My method. is to flex the thumb in the palm of the hand, and flex upon it

tightly all the fingers but the index. That makes the fist as small as possible, and by keeping the side of the finger up the smallest diameter of the fist comes into the smallest diameter of the outlet, and so the finger can be made to reach the greatest distance into the pelvis. By keeping the finger and the forearm in the same line the elbow can be placed upon the hip and the weight of the body thrown upon it to carry the fist into the pelvis until obstructed by the tuberosities of the ischium. If the examiner is using his right hand the natural position for him to take is to place his right foot forward and the left foot back, separating his feet sufficiently to bring his forearm, when kept in line with his finger, parallel to the top of the table. If examining with his left hand, his left foot should go to the front, and vice versa.

Before beginning the bimanual manipulation it is wise to learn all one can from the finger in the vagina, reserving the bimanual method for the exploration of what lies beyond.

Having now decided upon the position of the cervix, the next information to procure is the location of the fundus or body of the uterus. Not only is the fundus more easily recognized than any other organ in the pelvis, but it now becomes the point of departure for the location of other organs. Indeed, it is the guide post to everything else in the pelvis, and in complicated cases it is only by frequent recurrence to it, from time to time in the examination, that the other organs can be differentiated.

In the bimanual method the mistake is frequently made of placing the external hand so high on the abdomen that in pressing it down into the pelvis the thick abdominal wall, the omentum, and intestines are carried before it, thus rendering it impossible to recognize any organ with distinctness. My custom is to place the tips of my fingers just at the hair line, and perpendicular to the abdominal wall. With a moderate amount of pressure the fingers are then pushed toward the umbilicus, pressing before them the fat, the omentum, and the intestines, thus straightening out the fingers upon the abdomen until the ball of the hand comes directly over the symphysis. Steadying the ball of the hand firmly against this bone, with a slightly rotary motion the fingers are insinuated down into the pelvis their full length or as deep as the resistance of the abdominal wall will permit. The external hand is now held firmly in this position and with the finger of the other hand pressing against the cervix the entire

uterus is lifted up in successive impulses until it is made to palpate against the fingers of the external hand. If the cervix has been found in normal position the fundus, as a rule, can be thus felt and located. In cases in which great resistance is offered by the patient she can be made to relax the abdominal wall by taking a long, full breath and holding it as long as possible. When expiration comes complete relaxation is secured and manipulation proceeds comfortably and successfully. In extremely nervous patients I resort to the device of having them hold their

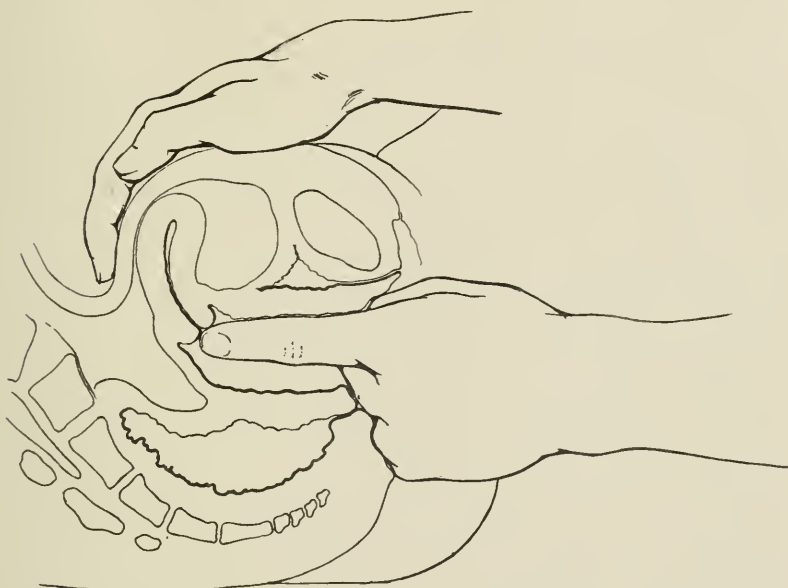


Fig. 5.—Fundus being restored to normal position; the cervix gradually changing to right angle to the axis of vagina.

breath while I see how many numbers I can count aloud, thus encouraging them to hold it as long as possible. For the longer the breath is held the more complete is the relaxation when expiration follows. This process may be repeated one or more times until perfect relaxation is secured. In bimanual manipulation both hands should not be in motion at the same time. One is used to carry the parts nearer to the other hand and hold them there while they are palpated by it.

If this maneuver is not successful, then the finger in the vagina lifts the uterus as high as possible and holds it there

while the external hand depresses the abdominal wall successively at various points over its expected location until the impulse given to the fundus by the hand is felt upon the finger at the cervix. It is the first sensation that is most difficult to obtain. When once that has been accomplished the external hand follows the denser tissue which indicates the presence of the fundus down into the pelvis, outlining the form and size of the uterus. In this way a clear mental picture is obtained. The mobility of the organ is learned by securing it between the two hands and carrying it first up and then down to discover through how great an arc it will swing.

It is important to have the bladder empty, and as a routine custom the patient should void urine the last thing before getting onto the table. If this has been neglected and the fundus of the uterus cannot be located, the examiner should suspect a full bladder and make sure that it is empty before proceeding. It is no unusual experience in my touch course at the Polyclinic for students to diagnose retroversion of the uterus when really its position is due to a full bladder, and the mistake is corrected by passing the catheter or having the patient void. After which the fundus is promptly felt just above the pubis.

Normal position for the fundus is anywhere between the symphysis pubis and the promontory of the sacrum; the essential feature is that it must be movable.

Taking up now the position of the cervix *in the axis of the vagina*: As has been said, this always indicates a pathological condition and the fundus will be found in one of three places, retroversion, retroflexion, or ante flexion. To determine its position the finger is passed along the posterior lip of the cervix, pushing it up into Douglass' pouch as far as possible. If the finger comes into a sharp angle beyond which a tissue rounds out and even comes forward in the shape of the fundus, the probabilities are that the condition is one of retroflexion. The same mental picture, however, may be presented by a fibroid tumor in the posterior wall of the uterus while the fundus lies above, either retroverted or ante flexed. Bimanual manipulation, as previously described, will determine this.

If the finger in being pushed into Douglass' pouch does not discover a sharp angle, but finds that the uterine tissue is continuous with the cervix as far as can be reached, that it widens out and takes the shape of the normal fundus, the probabilities

are that the uterus is retroverted. It may, however, be anteфлекed, the elongated cervix, which invariably attends anteфlexion, being sufficiently long and widening out at the flexure to give the impression of a fundus. The original impression, therefore, must be confirmed or corrected by eliminating the fundus from an anterior position or finding it there. This is accomplished by the bimanual manipulation, as previously described.

If in passing the finger back into Douglass' pouch the uterine tissue is lost to touch, in following the cervix, so that Douglass'



Fig. 6.—Fundus completely restored; cervix at a right angle; finger cannot reach posterior fornix.

pouch is empty, the probabilities are that the fundus lies to the front, in anteфlexion. This must be confirmed by the bimanual manipulation. The rounded mass resembling a fibroid which we have spoken of may be a prolapsed and cystic ovary; this is differentiated by its less pronounced density and by its usually being continuous with inflammatory tissue, reaching out to one side or the other.

After locating the fundus, the important points to be determined are its size, its density, and its mobility. These are determined by securing the organ between the two hands, carry-

ing both hands up or down together to determine its mobility, palpating it as completely as possible to estimate its size, and its density. By endeavoring to make as accurate a mental picture as possible in each instance a standard of comparison in all these respects is readily acquired. This is confirmed or corrected in many instances by subsequent operation, laparotomy, or vaginal celiotomy, and soon becomes very accurate.

Fibroid tumors of the uterus, if small, are felt as nodular or irregular masses projecting from the wall of the uterus. They may be pedunculated when they must be differentiated from a cystic ovary.

After the position, size, density, mobility, and fibroid condition of the uterus have been determined the organs next requiring investigation are the ovaries and tubes. The examiner must keep clearly in mind the normal relations of these organs to the uterus, remembering that they are attached to the uterus and are carried with it more or less completely in whatever position the fundus may be placed. If the fundus is in normal position and the appendages are normal, they will be found to either side of the fundus and nearly on a level with it. If the appendages are diseased, however, even if the fundus remain in normal position, they will be prolapsed more or less completely toward or into Douglass' pouch. At times they may be readily mistaken for the fundus itself, so that it is necessary to locate the fundus, to keep its position in mind, and from time to time to revert to it as a guide if any uncertainty arises.

To feel the ovary pass the finger directly beyond the cervix at the side, the finger nail being toward the cervix, force the fist well into the pelvis, carrying the finger as far beyond the cervix as possible. Then, keeping the fist firmly placed, elevate the end of the finger as high as possible. This will lift the base of the broad ligament and thereby tend to swing the cervix under the finger toward the examining side of the pelvis and likewise carry the fundus in the opposite direction, thereby dragging the ovary down toward or onto the ball of the finger; then by repeatedly bending the last joint of the finger a sort of ballottement is accomplished by which the ovary recedes from the finger and drops back again upon it. When once this sensation has been produced the external hand can push the parts down on to the examining finger holding it there and palpating it to the fullest extent. If the tube and the ovary are adherent and a tumor formed thereby,

this can be readily made out. If the ovary itself is large and cystic this can also be determined. A hydro- or pyosalpinx is recognized by its somewhat sausage shape and usually a less denseness of substance. A tubo-ovarian abscess presents in a larger mass and usually irregular in outline and more or less adherent. An ectopic pregnancy is differentiated from inflammatory condition by the history of the case and by absence of tenderness on pressure. An engorged or prolapsed sigmoid flexure is differentiated by outlining the rectum at some point in its course and rotating the finger over it from side to side, following it up, and determining its continuity with the suspected mass. Its contents can also be compressed and indented with the finger.

Undoubtedly the left side of the pelvis can be explored more thoroughly with the finger of the left hand, and the right side of the pelvis with the finger of the right hand, than by the same finger for both sides. In difficult cases it is my custom to do this. Ordinarily, however, I use the finger of the left hand for both sides, and find that I can determine the conditions with sufficient accuracy.

No effort has been made in this article to mention all the conditions that may possibly present in a case for examination, the effort having been to take the most common conditions and use them to illustrate the method. Its application will become a routine custom by practice and experience, and the details of the method that have been insisted upon will insure definiteness and accuracy.

616 MADISON AVENUE.

TEACHING METHODS IN GYNECOLOGY.*

BY

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IN gynecologic as in most other lines of medical teaching, textbook and lecture must be supplemented by demonstration and practice. The former are essential to a comprehensive and systematic conception of facts and principles, the latter to a working knowledge of them.

*Read before the New York Obstetrical Society, October 8, 1907.

Drawn mainly from two papers previously published—Teaching Methods in Gynecology and Obstetrics, *Brooklyn Medical Journal*, September, 1905; Picture-Taking in Three Dimensions, *OBSTETRICS*, Vol. I, No. 6, 1899.

It is best, so far as possible, that both plans of instruction be carried on in parallel courses. It is a distinct gain for the student if text-book and *viva voce* teaching can constantly be elucidated and enforced by objective illustration. Facts and methods are more easily learned and more firmly fixed in mind by observation. The pursuit of knowledge is no longer drudgery when the teaching is by object lessons.

The Lecture.—The cramming process of the medical lecture, to the exclusion of other methods, has long since passed. Yet the didactic lecture has its uses. It may be made especially helpful to the beginner, who too often, from lack of mental training, is unable to analyze his subject for himself, and to whom the text-book presents little more than a confused mass of facts. Salient points are emphasized, and a broad and a well-ordered grasp of the subject is more readily assured than by dependence on books alone. Yet lecture and text-book must go hand in hand. The lecturer is fortunate who can place in the hands of his class his own lectures in book form, or at least an epitome of them. When this is not possible, a well-arranged abstract of each lecture, with proper subordination of topics, and written upon the blackboard, or a wall chart, is a material help. With such aids the student not only more easily masters the subject, but he gets methodical habits of thinking and working, and learns how to grapple with new questions.

The teaching value of the lecture is very greatly enhanced by demonstrative methods. Drawings, photographs, charts, models, gelatin mounts of normal and of pathologic material, and especially demonstrations with the aid of phantoms, and, when possible, with clinical material, are extremely useful for supplementing, elucidating, and indelibly fixing what is taught. They help immensely in fastening the attention of the listener.

Objective illustration is invaluable, not only as an easier road to knowledge, but because it imparts the kind of knowledge the gynecic surgeon most needs to know. It familiarizes him with the actual facts of practice.

Good copies of line drawings and of half tones are to be had at small cost by photographic enlargement. Picture clippings from books and journals, mounted on cards by a photographer, make useful illustrations for circulation through the class. Ample material for the purpose is afforded by such works as those of Döderlein and Krönig, Kelly, and others.

The Quiz.—The student's pabulum needs not only to be well prepared and properly served; it must be digested. To do this is preeminently the work of the quiz. A well-directed quiz stimulates to think, to reason; it helps the student to assimilate what he has learned. Even more—part of the pupil's knowledge he may be taught to build for himself out of the material he already has.

An expert quiz master keeps attention alert; class as well as teacher are kept at work. One man's question is every man's question, and all work together.

Practical Training.—The most important advance in modern educational methods lies in the greater attention paid to clinical teaching. In none of the arts is experience more essential to success than in medicine, and especially is this true in gynecology. A man may be learned in the science, yet from lack of practical training may fail in the art.

Diagnosis.—In my own work, advanced students in sections of four are drilled in the diagnostics of gynecology by actual practice in the dispensary. Two clinics are conducted daily in adjoining rooms. Each room is provided with an examining table, a cabinet of instruments, a sterilizer, and other requirements for the work. The first step in the clinical course is history-taking. One student in each clinic fills out the case records; the other learns diagnostic methods. Before completing the practical course, he conducts examinations for himself, his findings being discussed and revised by the adjunct gynecologist on duty. An additional and more elaborate practical course in diagnosis is carried out by the chief of clinic following, so far as possible, a prearranged order of topics.

This part of the teaching is still further supplemented in the operating theater. At operation, demonstrable conditions are constantly utilized for the instruction of the class. In suitable cases a small section of advanced students, after preparing their hands and putting on operating gowns, make digital examinations. A good number of the class show a gratifying degree of diagnostic ability by the time they have completed the curriculum.

Operations on the Cadaver.—Formerly a certain amount of plastic surgery was done by the student with the aid of phantoms, some made of cotton flannel, others of glue jelly. This, for the most part, has been replaced by a course in operative gynecology upon the cadaver, which includes the principal gynecologic operations upon the pelvic viscera and also the incisive operations of obstetric surgery.

Surgical Clinics.—In the operating theater of the hospital the essential steps of operations are demonstrated and technical methods explained and illustrated. Small sections of the graduating class, with the necessary precautions, are admitted to the arena, where the details of the work may be closely followed. Another section watch the administration of the anesthetic under the instruction of the lecturer on anesthesia.

Students also visit *the wards* at stated times and observe the after course and treatment of patients whose operations they have witnessed. They are enabled to make complete records of cases which they have studied in the dispensary service, have followed to the operating room and watched throughout their convalescence.

In addition to this, sections of the fourth-year class may be received into the hospital to serve as assistant internes, each for a term of a few weeks.

Casts for Teaching Purposes.—Models for demonstrating numerous physiologic and pathologic conditions are often more instructive than wall charts or lantern projections. Illustrations in three dimensions have a greater teaching value than in two. Little or no skill is required in making them, while good drawings or color sketches necessitate the employment of a trained artist, and are costly. They have the advantage, too, of accuracy, which is frequently lacking in the work of the most expert draughtsmen. With a little expenditure of pains in coloring, when needed, the cast affords a close counterfeit of the natural object.

Subjects to which this method is more especially adapted are the pelvic organs and their relations, in health and disease. Casts may be had from the living subject from the anatomical laboratory, from organs removed at operation or from post-mortem specimens. The method is capable of wide application and of supplying a large amount of useful teaching material.

MATERIAL FOR CASTS.

Plaster-of-Paris.—Convenient for general use is plaster-of-Paris. A finely ground quality, like that used by dentists, is best, and, if not perfectly dry, should be made so by reheating in an oven. Plaster is especially suited for making moulds. For casts it has the disadvantage of being heavy and likely to chip, but the latter defect may be obviated in great measure by mixing the dry plaster with a very thin glue or by soaking the cast in the same. Painting with several coats of a saturated solution of alum serves the same purpose.

Paraffine Wax is an excellent material for moulds and casts. It is melted by heating, and is painted on the object in successive coats, till the mass is sufficiently thick to bear handling without fracture. Softer grades liquefy at a temperature not too high for use on the living subject. The most minute details are copied. Too soft a wax cannot be trusted to retain its shape in summer temperatures.

The Modeling Composition used by dentists serves well for moulds of moderately firm objects when minute surface details are not essential. The material becomes plastic by dipping in very hot water. Pressed firmly upon the object that is to be copied, it forms a thin matrix, from which casts may be taken in plaster, wax, or glue-jelly.

Glue or Gelatin and Glycerine.—Useful for many purposes is the glue or gelatin and glycerine mixture, known in Edinburgh as cathcartine.* This is practically identical with the glycerine jelly of the microscopists. Equal parts by weight of commercial glue or gelatin and glycerine are provided. The glue is immersed over night in water. The water is then poured off and the glue dried till barely pliable. It is liquefied by gentle heat over a water bath and the glycerine is added.† This is especially suited for making moulds of objects on which it can be allowed to stand for several hours. This length of time is required for setting to a firmness sufficient for removal from the object. The consistence of the resulting cast or mould may be varied to suit different purposes by varying the proportions of glycerine. It will necessarily grow harder with age until the water has all evaporated. This material, being flexible, can be pulled off from objects having undercut or overhanging parts.

The jelly softens when wet, but this defect may be obviated by chromating or formalinizing. About 2 per cent. of bichromate of potassium or $\frac{1}{2}$ to 1 per cent. of formalin is added to the liquefied glue. The mixture must then be protected from the light till the cast is made. On exposure to sunlight a surface layer of the cast is rendered insoluble.

Paper or Papier Maché.—Dr. J. C. Webster has used a method for making paper or papier maché casts, which was worked out by C. W. Cathcart of Edinburgh.* The surface detail in these casts is not quite so minute as that to be had with plaster, par-

**Surgical Handbook*, Caird & Cathcart, Edinburgh.

†*Journal of Pathology and Bacteriology*, Edinburgh, October, 1902.

affine wax, or glycerine jelly, but is sufficiently so for all ordinary purposes, and the material has the advantage of being light and not easily broken.

Cathcart recommends a blotting paper manufactured from wood pulp by the Messrs. Robinson of Liverpool, England, and sold under the trade name "Robosal." Other blotting paper could no doubt be found that would answer the purpose equally well.

TECHNIQUE OF PLASTER CASTING.

For inanimate objects and all others on which the plaster can be allowed to stand for a half hour or more before removal, the consistence of the mixture as first prepared should be that of moderately thin cream. Details are more minutely copied with thin than with thick mixtures. On the other hand, when time is an object, rapid hardening may be promoted by using a larger proportion of the dry plaster. The addition of a little common salt or the use of warm water still further hastens the process of setting when rapidity is essential.

Making the Mould.—For slow work, equal parts by weight of water and plaster are used. The dry plaster is sprinkled, little at a time, upon the surface of the water, and more added as fast as it sinks. Finally the mixture is stirred thoroughly to a uniform consistence. With the foregoing proportions, nearly ten minutes are required before it begins to thicken. Thicker plaster sets more rapidly. The surface over which the plaster is to be applied must first be oiled to prevent adhesion to the mould. Care should be taken that the coat of oil be not so thick as to obscure details. As the plaster begins to thicken, and while still thin enough to flow freely, it is poured over the surface to be copied. The plaster is manipulated through an overlying sheet of paper or a towel, to keep it in place till it sets, or the field may first be walled in with plaster or with modeling clay. The mould is removed when sufficiently firm. If piece moulding is necessary the mould is divided into the required segments by means of threads, which are first laid on the object in the proposed planes of section. The mould is cut into two or more pieces by lifting the threads through the plaster when half set.

Making the Cast.—The surface of the mould, after drying for twelve or twenty-four hours, is painted with thin shellac or the "Imperial Varnish" of the dentists. Just before applying the plaster the mould is oiled to prevent adhesion. Paraffin oil

answers well. The oil must not be applied too freely, lest details be obscured. The wet plaster is now poured over the mould. To eliminate air-bubbles, the first layer may be stirred gently with a small, soft brush, and the mould rocked from side to side as the plaster is poured on.

In plaster casting the mould, as a rule, must be destroyed in removing it from the cast. It is chipped off in pieces. If it is desired to save the mould, the cast may be made with glycerine jelly or by the papier maché process detailed below.

A flesh-like appearance may be imparted to plaster casts by coloring to the required tint with a solution of carmine in liquid ammonia and water or other suitable coloring matter, and finally coating the cast with two or three layers of melted paraffine wax.

A large part of the work in making the cast from the matrix is best left to workmen trained to the business. The process is so simple, however, that it may be carried out by an office-boy. When several duplicates are required permanent moulds may be made of plaster or metal, from which any number of casts can be produced at will.

GLYCERIN JELLY CASTING.

The material is melted by gentle heat in a water bath and poured into the mould. Care is required to eliminate air-bubbles. The cast becomes sufficiently firm for removal within twenty or forty-eight hours.

PAPIER MACHÉ CASTS.

Blotting paper of about the thickness of writing paper is selected and of any suitable color. The interior of the mould is smeared with oil to prevent sticking. A piece of the paper is laid on a flat plate and is saturated with flour-paste applied over both sides with a brush. Scraps are torn from the wet paper to leave the edges thin and frayed. Should fine details be required, the paper is torn into thin films. The paper is then laid upon the mould, and is pressed firmly into the irregularities of the surface with the fingers or with a stiff brush. Overlapping this, another piece is applied in like manner, and so on till the surface of the mould is covered. The first layer is reinforced by others to the required thickness. For large casts a backing of manila paper or muslin is required.

The edges of the mould are left unoled to insure adhesion of the cast at the edges. This holds the cast in shape while drying.

When dry the cast is cut from the mould at the margins and pulled out. The inside of the hollow cast is varnished, the edges are trimmed, and the outside coated with thin size. Coloring, if required, is best done with oil paint.

330 CLINTON AVENUE.

TEACHING BY CHARTS, AND MODELS, AND MODEL- ING.*

BY

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(With three illustrations and one plate.)

WALL CHARTS: METHODS OF MAKING THEM.

ONE selects, in the literature, the most nearly satisfactory picture. If it is simple or diagrammatic this original may be lightly ruled in one-quarter or one-half inch squares. The chart paper is ruled with squares larger than these in proportion as the chart is desired larger. Then the lines of the enlarged diagram are drawn with an airbrush and India ink, or with the slender brush made for line work, or with charcoal, and sprayed with fixative.

For most charts I find the best method to be enlargement by "solar printing" with or without a subsequent wash of transparent water color. Any maker of so-called crayon portraits will tell who makes for him those cheap enlargements which he simply fortifies with crayon touches. Other enlargements, such as those by bromide process, are expensive. This "solar printing" costs as follows:

Enlargement 24 inches square.....	\$0.75
Enlargement 36 inches square.....	2.25
Enlargement 36x48 inches.....	2.50

The paper commonly used is excellent (Steinbach paper).

All charts should be backed with gauze or linen, and this is best done by the solar printer, or backed paper can be bought. (Universal paper No. 100, 36 inches wide, is 70 cents a yard).

Washes of transparent color, thin but clear, are readily applied to differentiate still further muscle, bone and artery. Corrections

*Read before the New York Obstetrical Society, October 8, 1907.

or alterations are made with opaque color—that is, chinese white (from the jar or bottle, not from pans) is added to the colors.

Enlargement by squares or by washes of color over a solar print can be done by one who has little experience as a draughtsman, but corrections, if extensive, require skill with the brush. The pantagraph does not enlarge more than three diameters successfully.

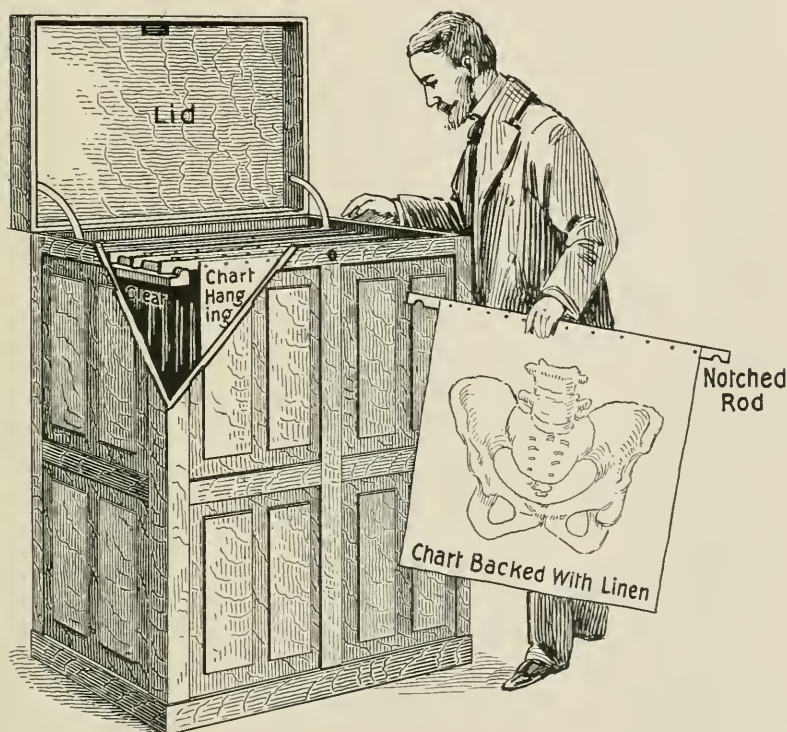


Chart box. A corner has been removed to show the charts, fastened to slats, hanging in place. The eye sees every label on the upper edges of the slats. Any one can be removed or examined without disturbing any other.

As an aid in teaching, the writer prefers the chart to the lantern slide, after experience with both. For a set lecture, where comparisons of different pictures need not be made, the lantern slide is more convenient. But where a series of changes, or the steps of an operation are to be demonstrated, or for continued exposure, as in anatomy—that is, in all cases where a reference back to pre-

vious illustrations is desired, the chart is in place. In the recitation room there can be no comparison. The demonstration-lecture, and the recitation-lecture, freely illustrated with models and charts, keeps classes alert and interested, and any method of rendering the accessories easy to handle is worthy of study.

HOW TO STORE WALL CHARTS.

Charts kept in drawers or on shelves cannot long be handled without tearing and fraying. Defacement by rubbing one over the other is inevitable. Selection is difficult. Although the best art dealers lay large etchings in inch-deep drawers, two or three in each, yet the under picture is never accessible, and the construction eats up money and wall space. Harvard uses it for anatomical charts.

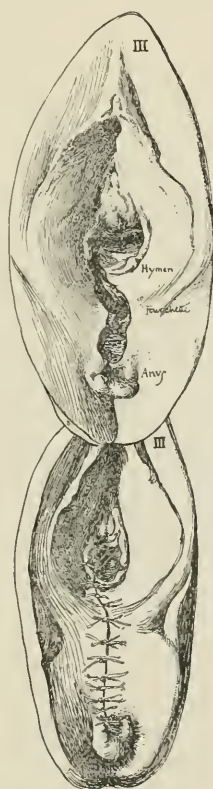
Portfolios are shabby makeshifts, unsuited to large charts. The edges of the charts suffer, and where sizes vary, selection of the desired picture is not expeditious.

Mounting on wood veneer or cardboard enormously increases weight. It restricts the size of charts as well as ease of transportation. No backing has been devised that will not warp in the large sizes. I stated my difficulties at one of the largest factories of cardboards. Skilled workmen mounted some charts, and papered the back of the mounts to try to prevent twisting; and yet curling occurred, as a member of the firm had predicted. Professors A. L. Ranney and B. C. Hirst use a uniform size of mount of wood veneer, and keep the charts, standing on edge, in boxes, to be turned over like cards in a card catalogue when searching for a given picture. But they are limited to two feet by three, and this seems to be insufficient and inelastic. To carry a number of these mounted charts about the building or to some outside lecture room is to transport useless bulk and weight. Dr. Hirst slips his mounted pictures into plain wooden frames in the lecture room. The effect is very good indeed.

Wall rollers, useful for a small number of large school maps, are not suited to our purposes.

Charts Hung on Top-slats Across Cleats.—The charts may be of any dimensions within the limits chosen, but should be backed with linen or gauze. Each chart is tacked to a wooden strip along its upper edge. These strips are all of the same length, and the chart may not be wider than the maximum width selected—say three feet. The thin bar that is found in the lower edge of every

window shade makes a suitable support, is cheap, and has a flat edge for labeling. When the drawings are not in use the projecting ends of the bars rest on horizontal cleats right and left. These side supports may be brackets, projecting two feet or less from any wall, and placed four feet above the floor, or the brackets may be made fast on the rear wall of any closet; or they may be



Example of glue mold flexible as india-rubber, which demonstrates a primary perineal tear, and is sutured as the living tissues are.

cleats inside the top edge of a big box. I find three feet by four to be as large a chart as is ever needed. A box two feet from front to back works well, 2x3x4 being the inside measure. A notch in the slot at each end, with a corresponding bead on the upper edge of the cleat or bracket, prevents the slots from derailing—although this precaution is hardly necessary.

Labeling.—On the upper edge of the wooden strip the title of

the chart is printed or written, in due order : department, subdivision and subject ; thus—

OBST. ANAT. PELVIC FLOOR, SAG. SECTION.

OBST. PUERPERIUM. BREAST BANDAGE. MURPHY.

Thus it will be seen that with all the titles under one's eye, self-catalogued, and with each chart independent of any other, selection, removal, replacement or rearrangement is utterly simple.

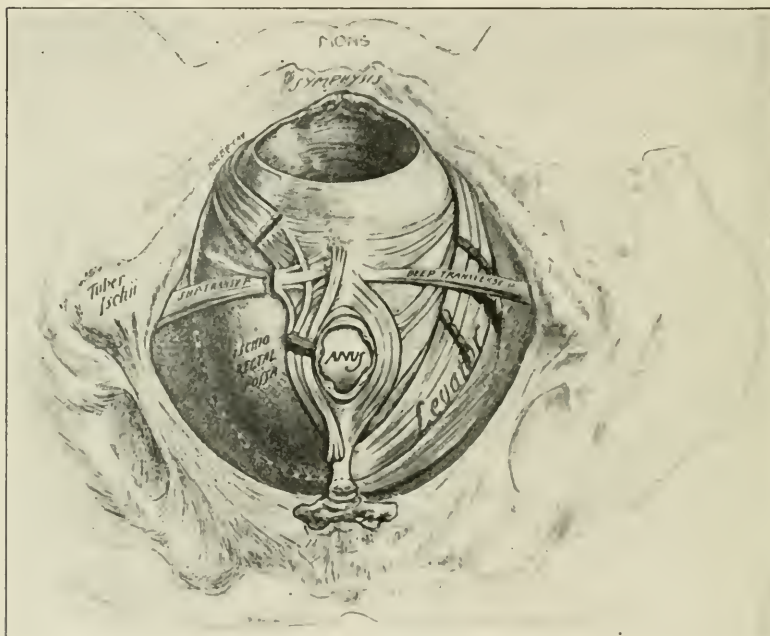
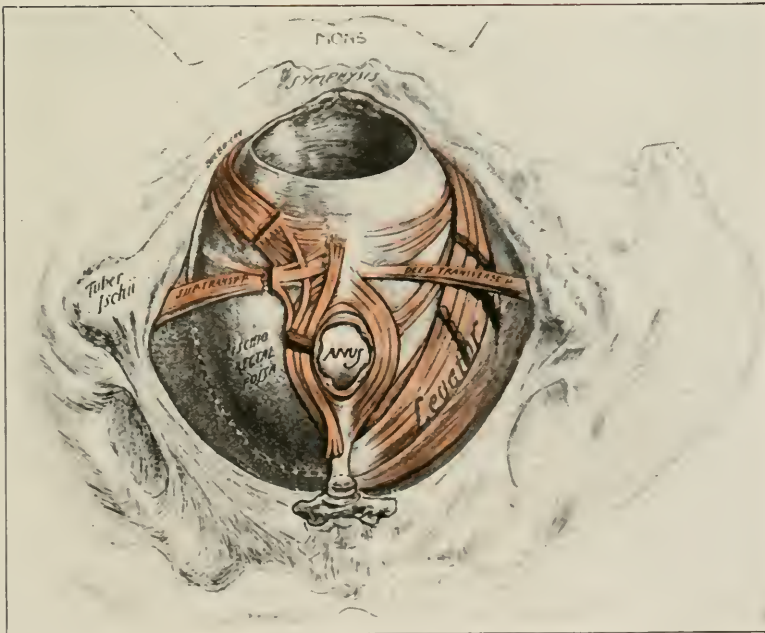


Fig 3.—Example of the value of lines or washes of color on diagram or chart. The distended muscles of the pelvic floor at the crowning of the head, and the lines of rupture which are near median. One with color, one without. Compare with plate.

TEACHING BY CASTS, MODELING CLAY AND GLUE MOLDS.

It is not too much to say that the gross anatomy of the genitals cannot be taught in two dimensions. In the dissecting room the female pelvic floor is in poor condition for study or operation. The difficulties in securing clinical opportunities in three dimensions in this country must always be great, the time limited, and the inspection cursory. But the topography of the vulva, and the



DICKINSON.—Examples of the value of lines or washes of color on diagram or chart. The upper diagram shows the lines of the corseted and uncorseted figure; the lower the distended muscles of the pelvic floor at the crowning of the head and the lines of rupture, which are never median. Compare with Fig. 3.

mass relations of the intrapelvic organs can be taught clearly and inexpensively by means of plaster casts and models, and by modeling. For instance, I find that the nurse in the first year of her training who has spent an hour in copying, in plastilina, a cast of the vulva, and has studied, in the light of this handiwork, a few other models, *knows* the relations of parts. She finds the clitoris, exposes the vestibule and searches the first fold half to three-quarters of an inch backward from the clitoris. In douching a virgin she does not poke into the fossa navicularis or, once inside the hymen, prod the anterior vaginal wall. She has learned the lines of direction, urethral, vaginal, anal, from her errors on the clay, not on the living patient. The first elastic mold which I pass around a new class, asking each to insert a two-inch pin where the catheter should enter, comes back looking like a porcupine. But after each nurse has worked on her own box of material her knowledge is at her deft fingers' ends.

Whether the medical course can equitably allot the time to the anatomist which he needs in order that the student shall model the bones is a matter in dispute, and it does not seem to the writer that the laborious modeling of the brain is essential and practical in these crowded days. But the small areas of daily clinical importance in practice, such as the nasal cavities, the pharynx, the auditory canal, and the genital canal would seem to have a just claim to the very moderate time required. To copy a model of the vulva, and of the normal and the torn cervix, to lay the plain ring or Smith pessary under a moulded uterus in the halved vagina, to go through the motions of reposition of a retroverted dummy uterus on the obstetric manikin—this is to teach gynecology by proper object lessons. The outfit is not costly. The *hard* reddish variety of plastilina should be used. It seems to be a mixture of clay and tallow and glycerine and coloring matter. It costs 35 cents a pound. One double-ended wooden modeling tool at 20 to 30 cents does well enough. The warmth of the hand softens the wax-like material so that preparation is much simpler than in the case of ordinary modeling clay, and very much more cleanly. As it does not need to be kept damp like clay, work can be dropped or picked up at any time without fear of cracking or spoiling. The finished model may be preserved by the student if he owns the stuff, or the material used over again any number of times.

MODELS.

Many museums contain wonderful reproductions in wax of various conditions bearing on the anatomy and pathology of the pelvis, as well as frozen sections, often in colored plaster. Berry Hart passes around colored gelatin reproductions of slabs of sections of the pelvis made of cathcartine. These are all of great utility. But it seems to the writer that Clarence Webster's sketchy colored plaster casts of the every-day vulva and cervix, and the common defects and injuries, and of the steps of the operations for their repair, could well be reproduced for a few cents like the medallions the Italian sells upon the streets, and that these should be sold to students, or at least lent to them, as the bone library collections are, for study in three dimensions. If I taught didactic gynecology this should be one of my first labors.

GLUE MOLDS.

Striking success in teaching suture of primary perineal injuries on casts of the pelvic floor, these being of the consistency of India rubber, demonstrate that gynecological plastic work could be thus taught efficiently. The red material has any white powder rubbed into the surface. As knife or scissors make the denudation, in the secondary operation, the red base shows up, simulating nature very fairly. The material is the same used to make the cheap little grotesque faces sold by street fakirs, which faces can be twisted into many forms. Any plaster worker can make this stuff—for the trade works constantly with the glue mold or matrix, if he is told the one secret of the process (for which I paid certain good money), and that is to add a little brown sugar to his composition. The material can be cast over again four to six times.

168 CLINTON STREET.

ON TWO CASES OF ABDOMINAL SECTION FOR TRAUMA OF THE UTERUS.

BY

JOHN BLAND SUTTON,

Surgeon to the Middlesex Hospital, London, England.

I WAS deeply interested in Charles E. Congdon's valuable contribution to this question in the fifty-fourth volume of this admirable journal, and as two cases illustrating the grave dangers which may arise in the course of curetting have come under my notice, it seemed to me that an account of them would interest your readers.

CASE I.—*Perforation of a nongravid uterus with a dilator; removal of six feet of ileum. Celiotomy; intestinal anastomosis; recovery.* A young married woman was being curetted by her medical attendant, in order to relieve painful menstruation. When the cervical canal was dilated sufficiently to enable him to introduce his finger, he felt a soft substance in the cavity of the uterus. This he seized with forceps, and, as he pulled, the substance came away easily until a large quantity accumulated in the vagina; on pulling hard, one end came away and another portion was cut through with scissors, and, as the mass fell into a pail under the operating table, the practitioner discovered to his horror that he had been withdrawing small intestine. The patient was immediately returned to bed. Eight hours later I was asked to see the case, and found the woman extremely collapsed from hemorrhage. Arrangements were at once made for celiotomy. On opening the abdomen it was found full of blood; this was removed; a perforation about 2 cm. in length in the left side of the uterus, near its upper corner, was found and occluded with a mattress suture. The abdominal cavity contained neither gas nor bowel contents; the ileum, where it had been divided with scissors, had contracted and completely closed the gut. The ileum had been torn out of the cecum. I then carefully sutured the cut end of the ileum into the cecum at the ileocecal aperture, and made the junction more secure by stitching over it a flap of peritoneum which had been torn from the ileum, but remained hanging from the cecum. There was a long piece of mesentery corre-

sponding to the ileum which had been removed; this was cut out and left a triangular space. The bloodvessels were secured, and the legs of this isosceles triangle, so to speak, were brought into apposition with silk sutures. A gauze drain was inserted and the abdominal incision closed. The patient, on her return to bed, received an enema of normal saline solution containing an ounce of brandy. Some suppuration occurred, but in the end the patient made an excellent recovery.

CASE II.—*Perforation of the uterus by dilators; prolapse of intestine into the vagina; abdominal hysterectomy; recovery.* A married woman, thirty years of age, suffered so severely from painful menstruation that she submitted to dilatation of the cervical canal at the hands of her medical attendant. The metal dilators at first passed with difficulty and, according to the doctor's statements, suddenly the womb became so relaxed that even the biggest dilators passed with the greatest ease; but when the parts were examined by means of a Sims speculum coils of intestines were seen in the vagina. I was asked to see the patient at once. There was very little bleeding, and, on introducing my finger into the dilated cervix, I felt the intestines and a wide rent through the posterior wall of the cervix. The patient was very/pale, but did not show very marked signs of shock. She was anesthetized again and the skin of her abdomen thoroughly washed with warm soap and water. On opening the abdomen there was about ten ounces of blood in the pelvis and a wide tear across the posterior wall of the cervix. I then performed subtotal hysterectomy, but left both ovaries and tubes; carefully washed out the pelvis with normal saline solution, and especially the coils of small intestine occupying the pelvis. The wound was closed, with drainage as a precaution. Some suppuration followed, and a sinus persisted for some weeks, but the patient made a satisfactory recovery.

47 BROOK STREET, GROSVENOR SQUARE W.

PRIMARY SQUAMOUS-CELLED CARCINOMA OF THE
BODY OF THE UTERUS.*

WITH THE REPORT OF A CASE.

BYC. C. NORRIS,
Philadelphia.

(With plate.)

THAT carcinoma follows the type of epithelium from which it arises is a rule that holds throughout the entire realm of pathology. That is to say, an epithelioma invariably has its origin from squamous epithelium, while an adenocarcinoma just as surely springs from a glandular type of epithelium.

It is for this reason that primary squamous-celled carcinoma of the fundus of the uterus is such a rare tumor. The endometrial cavity above the external os is normally lined with high ciliated, cylindrical epithelium, and carcinoma arising from it is almost invariably of the glandular type.

The rarity of squamous-celled carcinoma of the fundus is well shown by the fact that Cullen, at the time of the publication of his book on carcinoma of the uterus was able to find but three authentic cases of this condition in literature, and had himself never seen a case. Since that time, however, the tumor has attracted considerable attention, especially in Germany, and a number of cases have been reported.

Care must be taken in examining cases of squamous-celled carcinoma of the fundus to exclude all those cases in which a continuity from a cervical cancer can be demonstrated. Thus Emmanuel has collected nine cases, at least three of which are doubtful. Gebhard in 1892 was the first to report a case of primary squamous-celled carcinoma of the fundus. Since then undoubted cases have been reported by Fraischlen, Kaufmann, Batchelor, Keith and others.

A number of theories as to the origin of this tumor have been advanced.

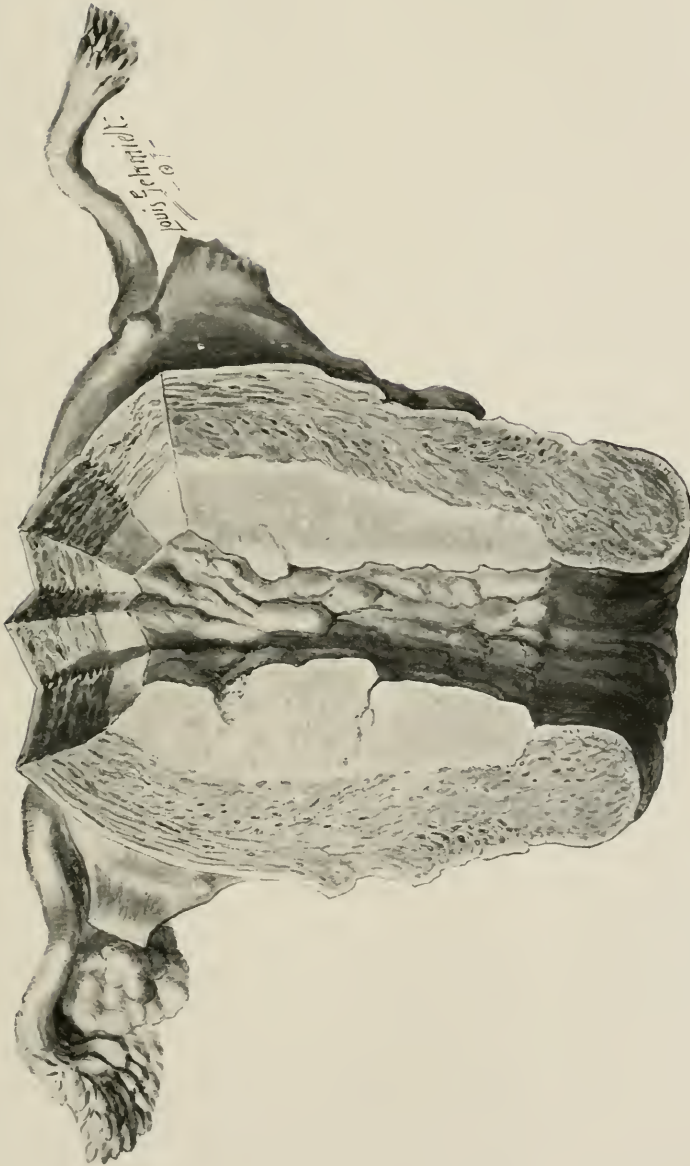
*Read before the Philadelphia Obstetrical Society, November 7, 1907.

As has been shown by the work of Ruge and Veit the squamous epithelium of the portio vaginalis normally ends at the external os; above this point the canal is lined by high, ciliated columnar epithelium. We know, however, that the meeting point of these different types of epithelium is not an absolutely fixed point, but varies considerably in different cases, and it has been thought that a very high extension upwards of the squamous epithelium may in some cases account for an epithelioma of the fundus, and this indeed seems probable in those cases originating in the lower part of the body of the uterus, but can hardly account for a localized growth occurring at the fundus surrounded by normal endometrium.

Another view is that a squamous or keratoid change takes place in the epithelium of the body of the uterus, such metaplasia occurring independently of a new growth. In 1896, Reis reported a case of hornification of the entire uterine mucosa and suggested the name of ichthyosis uteri for the condition. The uterus was inverted in his case, and this probably accounted for the change in the endometrium. Mainzer reported a somewhat similar condition occurring in four cases, two of which were suspicious of a malignant change, and in all of which local applications of formalin to the uterine mucosa or atmokausis had been applied.

Hitschmann finds a metaplasia of columnar into squamous cells a common occurrence in adenocarcinoma of the endometrium. This, in a careful study of our series of twenty-eight cases of adenocarcinoma of the body of the uterus at the Gynecological Laboratories of the University of Pennsylvania, we have found to be a rare occurrence. A transition of columnar to squamous epithelium in the uterus is reported by Noble. His case occurred in conjunction with a submucous fibromyoma. The irritation produced by the latter tumor may account for the metaplasia. A special feature of interest in this case was that the metaplasia was of a malignant type, and the fibromyoma was actually invaded by the epithelioma. Cases of local substitution of squamous for columnar epithelium are not confined to the uterus, but have been reported in the mouth, the ureter, the kidney, and the rectum, but always as a result of an inflammatory stimulus, although Lockyer, who examined Batchelor's case of epithelioma of the fundus, was inclined to think that such a change might result from old age.

Others have suggested that this tumor may be accounted for



NORRIS.—Primary Squamous-Celled Carcinoma of the Body of the Uterus.

by the theory of Durante and Cohnheim, *i.e.* that cancer may arise from an inclusion of embryonal structures. As the primary epithelium of the Mullerian ducts forms both the columnar epithelium of the uterus and the squamous epithelium of the cervix and vagina, one might assume that such an embryonal rest of squamous epithelium might occur. Still another suggestion is that the squamous cells may not be true squamous epithelium but a degenerated form of columnar epithelium, and this is the view Keith takes of his case.

No one of these theories satisfactorily accounts for all the cases. Some of the tumors are undoubtedly the result of a degeneration of the columnar epithelium; others from an unusually high continuance upwards of the squamous epithelium of the portio, while it certainly seems probable that if a hornification of the uterine mucosa occurs as a result of an inflammation or other cause, a carcinoma originating at that point would be an epithelioma.

The history of the case I have to report is as follows: Pathological No. 1,453; age, 47 years; white; nulliparous; home, U. S. A. Family history, good; general previous history, has been an exceptionally healthy woman; has never had a serious illness. Menstrual history: formally regular; five days; no clots; slight dysmenorrhea for a few days following the period; occasionally a slight whitish leucorrhea; never prolapse.

Outset of present illness; beginning three years ago for a period of six months, she menstruated every three weeks, but not as profusely as usual. Then periods returned to four weeks' type until a long sea voyage was taken, September, 1904, when menstruation again occurred every three weeks, and lasted in this way until the return from the voyage, November, 1904. After her return from this trip she had amenorrhea until July, 1906. Then about every three weeks she had a more or less profuse flow, lasting for a day or two. September, 1906, she had a "flooding," followed by a day or two of free bleeding every two weeks, between which times there was a more or less constant "show." Pain began in October, sharp and cutting in character. Diagnostic curettage performed in the middle of December, or about five months after the onset of symptoms. At this time there was a small nodule the size of a birdshot in the posterior vaginal wall at about the level of the external os. The uterine cavity was about four inches in depth, and after dilatation the finger felt a

small, hard nodule just above the level of the internal os, which could not be removed with the curette. The scrapings failed to show anything suspicious. For a month the pain and flow was relieved, but then returned. Examination at this time showed the nodule on the vaginal wall enlarged. A second curettage was performed, and many sections were made, and in one or two slides carcinoma was found.

Dr. Clark operated a few days later, a panhysterectomy being performed. The disease was at this time extensive, the actual cautery was freely used on the cut surfaces in the pelvis. An unfavorable prognosis was given. Recovery from operation was uneventful. Pain was relieved for a month or so, and then returned. Trypsin and the x-rays were thoroughly tried, but produced no apparent effect, and the patient died in April of exhaustion, which was about nine months after the onset of the first symptoms. I am indebted to Dr. John L. Atlee of Lancaster, Pa., by whom this case was referred to Dr. Clark, for this very complete history:

Pathological Report.—Patholog. No. 1,453. Operation: Panhysterectomy; right salpingo-oophorectomy; left salpingectomy. Pathological diagnosis: Squamous-celled carcinoma of the corpus uteri; normal tubes; metastasis to ovary. Macroscopic description: The specimen consists of a uterus and appendages—lacking the left ovary.

Uterus.—Is more or less enlarged, measuring 11 cm. from the tip of the cervix to the top of the fundus. Laterally, it measures 7.5 cm. and 5 cm. anteroposteriorly. The surface is free of adhesions and, generally speaking, the organ is fairly normal in shape. At the left cornua is an interstitial nodule, which somewhat distorts the organ. The diameter of this nodule is about 3 cm., and on the anterior surface are three other nodules, the largest of which has a diameter of .75 cm. These are subperitoneal; all the nodules are easily distinguished from the uterine muscle, being much paler in hue and of a yellowish color. There are no nodules on the posterior surface. On opening the organ, the uterine cavity is 8.5 cm. in depth and somewhat distorted by the new growth, which occupies almost the entire endometrial cavity above the internal os. The place of the endometrial cavity, and from one-half to two-thirds of the entire thickness of the uterine wall, is occupied by the new growth. This new growth appears to spring from the anterior and lateral walls of the corpus

uteri. The surface is smooth, but in some areas slightly necrotic, and is more or less bathed in a yellowish, foul-smelling discharge. The surface itself is lobulated, forming many dome-like elevations, the largest of which has a diameter of 3 cm. There are no actual ulcers, nor are there any of the rough, shaggy areas covered with the finger-like projections so often seen in cases of adenocarcinoma of this portion of the uterus. A part of the posterior wall of the uterine cavity shows a little thickened endometrium and is apparently free from the new growth. On section the new growth can easily be distinguished from the uterine muscle, and resembles in all respects the nodules already described. At a point a little above the internal os the new growth closely approaches the outer surface of the uterus, and on the left aspect of the organ, and at this level, and slightly on the posterior surface, is a nodule which penetrates the confines of the uterus, and has apparently been cut across at operation. One of the nodules on the peritoneal surface also looks as if it might have been adherent to the adjoining structures. Considerable perimetrial tissue has been removed on both sides of the uterus. It is soft and shows no evidence of infiltration. A short vaginal "cuff" (3-7 mm.) surrounds the cervix. This, together with the cervix proper, shows no gross evidence of being involved in the above described new growth.

Right Tube.—Is 9 cm. in length and normal in diameter. The abdominal ostium is open. The organ shows no evidence of any pathological change.

Right Ovary.—Measures $1.5 \times .75 \times .75$ cm. Is small and atrophic, and is an organ such as is often seen in women of advanced years. It shows no gross pathological lesion.

Left Tube.—Is 7 cm. in length, but otherwise resembles its fellow on the opposite side.

Histological Description.—Cervix.—The sections show the squamous epithelium of the portio normal. Tracing this towards the external os, it gives place to high cylindrical epithelium with which the entire length of the canal is lined. A few cervical glands are present; these are normal. This section includes almost the entire length of the cervix.

Section through entire thickness of the uterine wall at the fundus, including one of the nodules on the peritoneal surface. The inner surface is in some fields necrotic, but for the most part is covered by a thin layer of muscular tissue. This varies in thickness from one or two muscle fibers to 1-2 mm. The inner two-

thirds of the entire uterine wall is made up chiefly of atypical squamous epithelium arranged in islands and plugs and forming many epithelial pearls. In this area there is comparatively little stroma. Where it is present it is composed of involuntary muscle tissue and shows marked inflammatory reaction. This is especially true towards the outer limits of the new growth. The new growth itself is well supplied with blood and seems extremely active. With the exception of one or two areas of necrosis on the surface there is no evidence of degeneration. The peritoneal surface (nodule) shows an area of the same type of new growth, *i.e.* squamous epithelium. Between this and the outer borders of the primary growth are a number of islands of squamous epithelium, which are seen penetrating towards the peritoneal surface. In some areas these are pushing their way between the muscle bundles; in others they are apparently in lymph channels, while in still other fields they are found in bloodvessels. This manner of advancing through the bloodvessels is unusual in carcinoma, and may perhaps account for the metastasis found in the ovary and for the extensive glandular involvement noted in this case at operation.

Tubes.—Show no histological change from the normal.

Ovary.—Is atrophic. There is no evidence of recently ruptured follicles. The capsule is thickened and the substance of the organ is fibrous. Throughout that stroma are a number of small islands of squamous epithelium of the same type as that found in the primary growth. Some of these are small, and consist of but four or five cells, while others assume the character of ordinary epithelial pearls.

In this case there are a few points of especial interest. The woman was a nullipara, in which class of patients carcinoma of the cervix is extremely rare, but carcinoma of the body is more common. The tumor was extremely rapid of growth. The patient died nine months after the onset of the first symptoms. This is a much more rapidly fatal termination than ordinarily occurs in adenocarcinoma of the corporis uteri. Metastasis occurred rather early. It was present in the ovary, and possibly in the vagina, and although the vaginal nodule was not examined microscopically it seems probable from the history that it was a metastasis, or, more likely, an implantation growth.

The fact that there was no history of endometritis, and that there had been no local applications or treatments to the uterine cavity, seems in this case to exclude the theory of an inflamma-

tory transition of columnar to squamous epithelium. That the cervix was normal, and that the cervical canal was lined with columnar epithelium, throws out the probability of a high extension upwards of the squamous epithelium of the portio. That the cancer cells at the invading edges of the new growth failed to show any degeneration changes, and that although sections were taken from various parts of the tumor, none of these showed any transition from columnar to squamous epithelium, and that the metastasis to the ovary was of squamous type seems to point to this case as one of true squamous-celled carcinoma rather than a degeneration of an adenocarcinoma. I am inclined to the belief that in this case there had been a preexisting metaplasia of the columnar to squamous epithelium, possibly as a result of senile changes, and that this case should be accounted for on this ground.

It will be remembered that the menopause occurred two years before the onset of the symptoms.

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A CASE OF DECIDUOMA MALIGNUM.¹

BY

AP MORGAN VANCE, M. D.,

Louisville, Ky.

(With four illustrations.)

THE rarity of this form of malignant disease of the uterus and the diversity of opinions as to the nature and origin of these growths make me wish to put the following case on record.

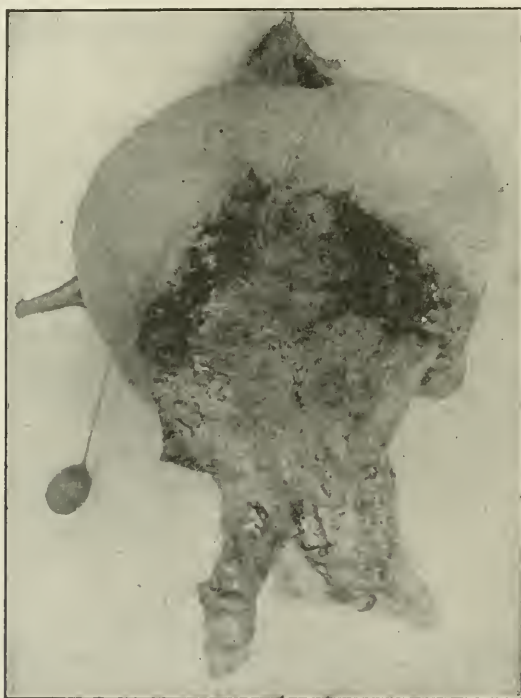


Fig. 1.—Showing the gross specimen with a small cyst on the left. The dark portion shows the site of the growth.

On April 14, 1907, I was called by Dr. John G. Cecil to see

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists at Detroit, September 17-19, 1907.

Mrs. H., age 27. The history up to two years before was negative. Three years before she had been delivered of a full term healthy child; there were no complications beyond a cervical tear. One year after this labor she miscarried at three months without apparent cause. This was an incomplete abortion requiring a curettage. After this an operation was done to repair the uterine neck, preceded by another curetment. One week before I saw her she miscarried at three months for the second time without assignable cause. The fetus was delivered before Dr.

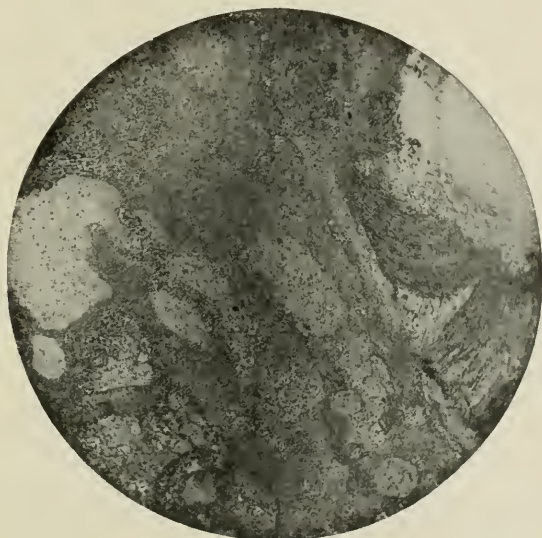


Fig. 2.—Photomicrograph of a section under low power. In the left two-thirds are seen a number of partially degenerated and atrophied chorionic villi. The right third shows a space filled with fibrin, leucocytes, and erythrocytes, and in the lower portion a few cells of Langhans' layer.

Cecil arrived and was removed by the husband. There was no hemorrhage or other complication except that no afterbirth came away. No interference was undertaken and no untoward symptoms occurred until the day I was called in, six days after the expulsion of the fetus. The fetus was only partly developed for the period of gestation. A little fever and some odor had appeared, and I advised a thorough cleaning out of the uterus. This was done immediately without anesthesia, the patient refusing to be anesthetized because at the previous operation there

had been some difficulty. The os was found very patulous with a small cord protruding. Slight traction brought this away, a small disc of membrane being attached. A very thorough curettage was done, and the cavity which was six inches deep was repeatedly wiped out with large gauze pads.

For three weeks she was supposed to be slowly convalescing, a moderate discharge continuing. At this time in answer to a hurried call I found that an excessive hemorrhage had taken place while the patient was up in a chair. She had bled to almost



Fig. 3.—Photomicrograph—low power. In the upper left quadrant is seen a villus, and to the right of it a large mass of epithelial cells from Langhans' layer. Just below the center is a blood space, the walls of which are infiltrated by Langhans. Below this the musculature of the uterus.

complete exsanguination, as evidenced by the very feeble pulse and great pallor. I immediately tamponed the vagina tightly with gauze and the next day removed the patient to an infirmary. The packing was removed at the end of forty-eight hours in order that I might obtain a scraping for further diagnosis. Very active hemorrhage took place at once, which was not controlled by another tampon, the patient coming within the verge of bleeding to death before I could get the uterine cavity packed with gauze. I obtained a small piece of tissue from the uterus which, upon

examination by Dr. John E. Hays, proved my diagnosis of the malignant character of the trouble to be correct.

During the next three days with careful feeding by the stomach and frequent saline injections by rectum some general improvement occurred, whereupon I did a complete hysterectomy from above, first thoroughly cleansing the vagina, repacking the cavity



Fig. 4.—Photomicrograph under high power of the blood space shown in Plate 3. Here we see a band of syncytial tissue dividing the space into three portions and the left wall infiltrated by epithelial cells, with a mass of same cells to the right of the narrow slit.

of the uterus, and sewing up the os. The patient was so weak by this time that a death on the table seemed imminent, but the foul condition of the uterine cavity and the development of fever compelled me to go ahead. Subcutaneous injections of saline solution were liberally used and the operation was completed in forty minutes.

The convalescence has been slow, but seems complete at this date, two months after the operation, the patient being up and

rapidly gaining. Dr. Hays made a thorough investigation of the growth and his report with four illustrations are submitted below.

PATHOLOGIC REPORT.

This growth was situated on the anterior wall of the uterus, about the size of an almond, reddish yellow in color, and very friable, resembling placental tissue.

Sections under the microscope showed the growth to be composed of masses of clotted blood, chorionic villi, and syncytial tissue. The villi are much degenerated and it is hard to make out the layers of cells,—the Langhans and syncytial layers,—as they appear in normal placental tissue. Yet epithelial cells (Langhans) and undifferentiated masses of protoplasm are found in the fibrin and infiltrating the musculature of the uterus. These cells and syncytial masses are also found infiltrating the walls of the blood channels.

From the clinical history and the histologic findings, I have no doubt but that this growth is a chorionic epithelioma of the uterus.

JNO. E. HAYS, M.D.

It is hardly worth while for me at this date to enter into any extensive discussion of the subject of Deciduoma Malignum. There have appeared in recent years a number of excellent articles on the subject. One by Frank E. Pierce, B.S., M.D., in the *AMERICAN JOURNAL OF OBSTETRICS*, March, 1902, is particularly thorough and exhaustive. Also, there is a clinical review of the subject by Louis J. Ladinski, A.B., M.D., in the April number of that journal of the same year.

Up to the present time something over two hundred cases have been put upon record, the first notice of this particular form of malignant growth having been made as late as 1888 by Sanger. I feel sure, however, if the unreported and unrecognized cases were included, it would be proven much more frequent than at present it is supposed to be.

921 FOURTH AVENUE.

INTRAABDOMINAL TORSION OF THE OMENTUM WITHOUT HERNIA.¹

BY

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IN 1882, Max Oberst¹ described the first observed case of any form of torsion of the omentum. From that time down to the end of 1904, Corner and Pinches² were able to find fifty-three reported instances of omental torsion, and their article undoubtedly stimulated operators to note and report such cases, as the literature upon the subject has become fairly voluminous since the date of their publication. Torsion of the omentum has been variously classified, but as the great majority of all cases are found to be associated with hernia, these classifications are not pertinent to the present discussion, excepting as they apply in ruling out certain cases which have been reported as clear instances of intraabdominal torsion. For our present purpose we may classify omental torsion under three heads:

1. Torsion with hernia, in which the omentum is in the hernial sac and there twisted, or both twisted in the sac and also in the abdomen, or adherent to the sac and rotated above it.
2. Torsion of the omentum in the abdomen, hernia also existing or having previously existed with no apparent present connection between omentum and sac.
3. Pure intraabdominal torsion, no history of hernia given, and none existing at the time of observation. The last class only is dealt with in this paper.

In 1904, Scudder³ reported in full a case of total torsion of the great omentum, and says that after a complete search of all the literature upon the subject he is satisfied that but two cases of this form have been reported previously. The next year Corner and Pinches, in the article above referred to, describe six reported cases but leave out one which Scudder correctly accepts, making seven in all up to the end of 1904. As complete a search of the literature as possible reveals four more reported cases from

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

that date down to the present time, and, including the case here reported, brings the total up to twelve instances. By a personal reference to all but one of the original articles, I am satisfied that the following cases all belong to the class of pure intraabdominal torsion, no suspicion of hernia being present.

CASE I.—Eitels,⁴ male, age 44, miner, sought relief because of ascites. He had been tapped four weeks previous to the operation but the fluid had returned. After tapping the second time a tumor could be made out in the median line of the abdomen of a doughy consistency, not painful to pressure. At operation the omentum was found rolled upward and inward. It was unrolled and returned to its normal position, after which the patient recovered and was well four years later. It was thought that pressure on the abdomen by a box which the patient habitually carried in his daily labor was responsible for the condition.

CASE II.—Noble,⁵ female, age 24, with a gonorrheal history, had repeated attacks of pain in her stomach with nausea and vomiting. On this occasion the pain was so severe as to necessitate medical assistance. Her temperature was a trifle elevated; a mass could be palpated between the anterior superior iliac spine and the umbilicus. Diagnosis, appendicitis. She refused operation for six days, when the increasing severity of her symptoms led her to consent. Upon opening the abdomen, a mass two inches wide and five inches long, composed of a process of rotated omentum was found attached to the tip of the right tube. Here it was thought that the peristaltic movement of the intestines acting upon the omentum attached at both ends was the principal etiological factor.

CASE III.—Baldwin,⁶ male, age 47, had suffered for two days from pain in the right iliac region, had nausea but no vomiting. There was tenderness over McBurney's point and rigidity over the right rectus. Diagnosis, appendicitis. At operation an obliterated appendix was found and a portion of twisted omentum the size of a fig with its pedicle rotated eight times upon itself. When unrolled this portion of omentum was the size of the hand.

CASE IV.—Scudder,⁷ male, age 25, shoe shop employee, had been ill seven days with abdominal pain. first general, later localized on right side. Vomited the first day but not afterward. Rigidity of abdomen was confined to the right side, in which a mass of indefinite outline could be palpated, occupying the whole of the right iliac fossa. Mass dull to percussion, not

markedly tender. Diagnosis, appendicitis. Operation showed a twisted omentum rotated several times upon itself with thrombosed veins. Appendix was edematous and its interior filled with mucopurulent material. This case was presumed to have arisen primarily from circulatory disturbance in the omentum without adhesions or external cause.

CASE V.—Stewart,⁸ male, age 35. Four days before operation the patient had an attack of severe abdominal pain with vomiting. Pain and vomiting persisted until operation. Temperature 101°, pulse 120. Right side of abdomen was rigid and the point of greatest tenderness was just at the outer border of the right rectus on a line with the umbilicus. Bowels were moving freely. Diagnosis, appendicitis. Appendix was removed and found to have three minute hemorrhagic spots under the mucosa, otherwise normal. Further search showed right lower corner of the omentum twisted upon itself once around. The mass thus formed was six inches long and three inches wide.

CASE VI.—Syme,⁹ female, age 51. Ten days before admission slipped and fell; three days later had severe abdominal pain and a swelling appeared. No vomiting, temperature and pulse both normal. Examination showed a rounded tumor from 1½ inches below the costal margin extending down the right side to the iliac crest and inward to the umbilicus. It was movable and dull on percussion. The diagnosis was suppurating omental hydatid. Operation showed that the tumor was composed of omentum twisted several times upon itself. It was thought that as the mass was adherent to the intestines it might have been rolled up by peristaltic action.

CASE VII.—Corner and Pinches¹⁰ give a case in Saint Thomas's Hospital reports which I have been unable to verify but of whose accuracy I have no doubt, after reading their very clear-cut classification.

CASE VIII.—Riedel,¹¹ female, age 38. A year previously, during pregnancy, had a feeling of pressure in lower abdomen as though she must force something back. Was delivered of a dead child at six months. After getting about again the pain was gone but the feeling of weight remained and became more marked until her present illness, which began with headache and malaise a few days after carrying a heavy load. Bowels moved, no vomiting, but pain in right side of abdomen. Examination showed nothing abnormal on the right side. On the left side above the

pubes a large swelling was visible. By vagina the mass could be felt indefinitely attached to the uterus. Pulse and temperature normal. At operation a chronically inflamed appendix was removed and twisted omentum adherent to the mesentery of small intestine, the uterus, and anterior pelvic wall. A small pedicle twisted in two places connected the rotated portion to the normal omentum.

CASE IX.—Riedel,¹¹ female, age 38. Onset with vomiting and no pain. Ten days later had first pain, was tender to superficial pressure with palpable resistance. Temperature 37.5° , pulse 102. Diagnosis, gall-bladder adhesions. At operation a twisted pedicle of omentum the thickness of a pencil was found with the distal portion of omentum the size of the hand adhering to the liver. Two finger breadths below the liver was the tip of the appendix, free but reddened and inflamed. Etiologically he considers that the tumor formation, with possibility of rotation on the one hand, or adhesion of the tip with clumping and subsequent rotation of the remainder of the omentum, plays the most important part.

CASE X.—Simon,¹² male, age 26. For ten days had frequent attacks of right-sided pain but was able to work. Two days later had complete obstipation with vomiting. Temperature 100.4° , pulse 100, resistance palpable over iliocecal region, entire right half of abdomen dull on percussion. Some tympany, abdomen not tender. Diagnosis, appendicitis. Upon operation a pedicle as thick as the thumb was found tightly attached to the colon. Appendix was adherent and was removed, but no evidence of inflammation in its interior.

CASE XI.—Cullen,¹³ male, age 47, conductor. One day after putting a drunken passenger off his train, felt pain over appendical region. Six days later the temperature was 100.5° , pulse 100, leukocytosis 17,600, no mass, no rigidity. Diagnosis, appendicitis. Operation showed the appendix thick and adherent, and only after its removal was a mass discovered composed of rotated omentum with a pedicle 1 cm. thick attached to the junction of the ascending and transverse colon. This was becoming gangrenous and was removed.

CASE XII.—May 26, 1907, personal, F. B., male, age 21, brakeman. For a year this patient says that he has had considerable digestive disturbance, which he attributed to improper food, smoking to excess and drinking. A month ago he suffered an injury to one foot in a railroad accident, but received no ab-

dominal hurt. Four days ago he was taken with an attack of severe epigastric pain, after which he vomited and had diarrhea, both pain and diarrhea having persisted until the present date, but there have been intermissions when he felt quite well. One such intermission took place this morning, and he rode in from the country in an open carriage, the ride producing an immediate return of the pain, which was considerably increased in severity. He then first consulted his physician, who diagnosticated appendicitis and advised surgical consultation, remarking that the case had some rather peculiar features. Examination showed a very well developed, muscular young man, the countenance was anxious but not pinched, temperature 101° , pulse 116, chest negative, abdomen only a trifle distended and everywhere a little rigid. Cutaneous hyperesthesia not marked. Most acute tenderness just below and to the right of the umbilicus. The entire right side of the abdomen was dull on percussion and flat in the median line. There was an indefinite sense of resistance in the same locality, but no distinct mass could be felt. There was no hernia.

Notwithstanding the rather unusual features of the case, the diarrhea and the lack of localized rigidity, a diagnosis of probable appendicitis was made and the patient sent to the hospital. It was felt that there was no necessity for haste, that he might be in the declining stage, with some temporary discomfort produced by his ride; hence he was advised that an operation would be made in the morning if he was not materially better. Next morning the temperature was 100.4° , pulse 106, but he had passed a wretched night. The facial expression was decidedly worse, the abdomen being more distended. McBurney's incision was followed by a gush of a large quantity of bloody serum. The base of the appendix was readily found, but, in endeavoring to trace it a large mass became apparent toward the median line, with free intestine between it and the incision.

Not doubting that the median mass was a secondary abscess, a second incision was carefully made over its center, when a dark purple tumor was exposed, everywhere lightly adherent by its anterior surface to the abdominal wall. This was cautiously freed and found to consist of omental tissue, when its deeper attachments to the pelvis and adhesions to the intestines were broken up and the mass delivered through the wound. Only after its exposure in this way was the pedicle, about the size of the finger, brought to light. This was attached close up to the transverse colon and was twisted tightly five times around from left to right.

Before ligating the omentum hard up against the colon, the tumor was partially untwisted, but immediately returned to its original shape while lying in the wound after the pedicle was cut, much as a piece of string or rope might do by its own elasticity. The median incision was closed and the appendix, pointing upward and inward and closely adherent, was removed. There was considerable shock, but convalescence was perfectly smooth, both temperature and pulse being normal on the third day. The specimen as shown resembles the fresh specimen very closely, excepting that it has lost its original deep color, which was due to the presence of free blood in its meshes, and the thrombosed veins have shrunk considerably.

An analysis of eleven out of twelve cases here considered shows that the diagnosis of appendicitis was made seven times; in one there was no diagnosis, in one the decision lay between appendicitis and tubal disease, one case was regarded as gall-bladder adhesions, and one as suppurating hydatid of the omentum. No case was correctly diagnosed. There were seven males and five females, and the ages ran from 21 to 51. The temperature in the acute cases showed a remarkable uniformity of from 100° to 101°. In five instances the entire omentum was involved, in five a portion only, and one was a case of accessory omentum. One case was chronic and ten acute, and in eight of the acute cases there was evidence of past or present appendiceal disease. Naturally the greatest interest centers about the cause and mechanism of omental torsion and its diagnosis, the first from an academic, the second from a practical standpoint. The three latest articles upon this subject are those of Smythe,¹⁴ W. W. Richardson,¹⁵ and Lejars,¹⁶ and in all of them considerable attention is given to the question of diagnosis, while etiology is gone into very fully by both Richardson and Lejars.

Richardson thinks that matting of the free extremity of the omentum, making it resemble a ball, permits of its easy rotation, as does also the attachment of the tip. Forces acting in the abdomen, like peristalsis, and possibly automatic motion of the omentum may then cause rotation. Lejars also compares an omentum adherent by its tip to a triangular handkerchief fastened at two corners, allowing the third to rotate, and says that adhesions in intraabdominal torsion ally the cases to hernia in which torsion takes place. He also calls attention to tumors of the omentum which produce torsion, and particularly to tumors on one edge of the omentum.

Payr, quoted by Scudder, calls attention to the necessity for differentiating sharply between those causes which act externally and those which are due to conditions of growth and circulation, and especially mentions the possibility of twisting taking place by the over full veins wrapping themselves, and incidentally the omentum, about the shorter but stiffer arteries. It is evident that four distinct theories have been propounded to explain omental torsion without hernia. These are: (1) Causes acting externally only, such as pressure analogous to the causes of torsion in omental hernia, ectopic testicle, etc. (2) Some internal force, such as intestinal peristalsis; or external force, such as pressure, whether exerted by the abdominal wall or upon it, serving to rotate an omentum whose tip is temporarily converted into a ball, which rotates much more readily than would the spread-out apron. (3) The same forces acting upon an omentum adherent at its tip. (4) Circulatory changes leading to twisting of the veins about the more resistant arteries.

The fact that in eight of ten acute cases there existed either old or recent appendicitis is fairly safe evidence that matting or clumping of the omentum might be presupposed, and that presumably upon one side. Following this, external pressure, peristaltic waves, even the possible automatic activities of the omentum itself are perfectly competent to start rotation, which when once started is constantly made more complete by the circulatory disturbance above referred to. That the last factor is principally concerned in complete strangulation is proven, I think, by the remarkable way in which the pedicle in my own case returned to its original relation to the remainder of the mass when it had been cut, after untwisting it.

Concerning diagnosis, Richardson says that the majority of cases have been of an acute character, that the symptoms do not appear until sufficient torsion has occurred to interfere with the return circulation, and that a probable diagnosis can be made only in the presence of an old hernia reducible with difficulty. Lejars holds that the series of symptoms usually noted, if associated with hernia and a right-sided mass, should almost without fail lead to the diagnosis of omental torsion rather than hernia. If hernia is absent, the quickly developed mass without the violent symptoms of suppurative appendicitis may point toward a probable diagnosis.

Smythe gives in detail what he considers the chief differential points between appendicitis and torsion, and says that he believes

the diagnosis should be made after having seen one case. His chief differential points are the older age of torsion patients, the great preponderance of cases appearing in the male, the absence of nausea and vomiting, and the lower temperature. The pain is not so severe in torsion and the patient's countenance is not so anxious. Superficial dulness on percussion and the sudden appearance of a tumor in the absence of violent symptoms also point to torsion, in his opinion. While all these things may possibly be true of a large series of cases of both diseases, the analysis before given throws some doubt upon their value in the individual case with which one may be confronted. Youth is no bar to torsion, as evidenced by my own case, nor old age to appendicitis. The larger series of cases here collected reveals no great discrepancy in sex. Nausea and vomiting are frequently seen in torsion and are sometimes absent in acute appendicitis, while severe pain is sometimes present in torsion and absent in appendicitis of the gravest type. Taken altogether, it would seem that superficial and extensive dulness, with the early and sudden appearance of a sensitive, but not especially painful tumor, or marked resistance over a large area in the absence of hernia in conjunction with much milder symptoms than one would expect in acute appendicitis, giving rise to such pronounced physical signs, are our most reliable guides in establishing a diagnosis of probable torsion of the omentum.

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NYMPHOMANIA AS A CAUSE OF EXCESSIVE VENERY.¹

BY

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THE sexual instinct is not so common in woman as it is in man. With the latter it is, under normal conditions of health and vigor, an ever-present, powerful impulse to procreation. Sexual desire is entirely absent in a much larger number of women than is generally supposed. If present it is ordinarily not so strong as it is in man. If a woman has in her makeup the sexual instinct to the ordinary degree, that impulse is only aroused by the man she loves, and for no other has she that feeling. There is a small percentage of women in whom it is very strong, but relatively to the whole number the percentage is small.

Woman naturally is a monogamous, and man by nature a polygamous animal. Among many prostitutes the feeling of coitus with men in general is one of disgust. A small proportion of them are led to the life by their strong sexual desires. I have been told by many that their only reason for continuing it is that they are unable to earn a livelihood otherwise after having the stain upon their character due to their nefarious occupation. Otherwise they would gladly leave it for a purer life. Generally every such woman has some one man friend whom she chooses to call her lover, with whom there is sexual desire and gratification. Fortunate it is for the morals of humanity that woman generally is not so constituted sexually as is man, otherwise, as has been aptly said, this world would be one vast brothel. Surely, to the influence of woman we must look for the standard of moral tone, however high that may be. This being the sexual status of women, we turn to those instances in whom nymphomania and the resulting excesses and perversions exist.

Nymphomania is an excessive development of sexual desire in the female, manifesting itself in various ways dependent upon the mental status, moral sense, environment, or social scale of the

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individual. Masturbation is probably one of its most prominent manifestations. Masturbation in normally constituted girls and women is relatively infrequent. I have seen but very few cases in my whole experience. Among women physicians of large experience with whom I have conversed, with the object of obtaining material for this paper, the verdict has been the same, and naturally a mother would take her daughter, in whom she discovered such a habit, to a woman rather than to a man for advice. Constituted as most women are in their sexual instincts, there must be an exciting cause for masturbation in those who are physically and nervously normal. It is doubtful if the habit is acquired simply by the bad example of schoolmates or other companions who are addicted to the habit. I have personally never seen a case for which some cause other than bad associations was not found, and such also has been the experience of other competent observers.

Except in those born with strong sexual appetites the causes generally may be classed as local or neuropathic in character. The local causes are such as produce irritation of the clitoris and vulva, such as adherent prepuce, with or without collections of smegma beneath it, pin worms coming forward into the vulva, irritating vaginal discharges, or skin diseases, such as eczema of the vulva. The most frequent in the writer's experience is adherent prepuce with decomposing smegma beneath it. Separation of the adhesions, with or without circumcision, has in every such instance cured the simple cases in whom there appeared no neuropathic taint. Cure of other mentioned local causes also is followed by prompt and satisfactory results. Local causes, however, in those predisposed to nymphomania, when the habit is once established, may lead to a lasting habit, even when the causes are removed. The sexual instinct is not resident in the sexual organs; its center is in the brain; it is mental, and in derangements of the sexual centers in the brain we are to look in a goodly proportion of cases for those causes of nymphomania which are lasting.

Kraft-Ebing says that in maniacal individuals of the female sex the sexual sphere is often implicated; in fact, it is the rule that the sexual complexus of symptoms is always but the partial manifestation of a general psychosis. I am informed by a woman physician resident in one of the large State hospitals of New York that out of about one thousand insane women, at least 8 per cent. to 10 per cent. are masturbators and, from such histories as she

can get from friends of the patients, that masturbation is a result of their mental disease rather than a cause, that masturbation followed the mental breakdown, or began with it. Dementia precox is a disease of young subjects usually, and in many of the females suffering from this form of mental disease nymphomania exists. Occasionally one recovers, and with recovery nymphomania ceases, showing the sexual aberration to be a part of the psychic disturbance. She has had under her care patients for whom clitorodectomy was performed before coming to the hospital in an attempt to prevent masturbation, but in no instance was the habit to any degree checked by the operation. Local treatment does not benefit them; on the contrary, it intensifies the erotomania. The only treatment is in stimulating mental self-control as soon as the patient's mentality allows of an appeal to their volition and higher powers. In most instances nymphomania developed during the child-bearing age of those chronically insane, continues even after the menopause is past, and some cases of insanity developed after the menopause also develop nymphomania. This is all upon the authority above cited.

In women suffering from hysteria the sexual life is very frequently abnormal. As Kraft-Ebing says: "Indeed, always in predisposed individuals, all the possible anomalies of the sexual function may occur here, with sudden changes and peculiar intensity, and on a hereditary degenerate basis and in moral imbecility they may occur in the most perverse forms." It therefore appears that we have masturbation in three classes of women: first, those mentally and nervously normal with purely local causes; second, those of neuropathic taint, hysterics and neurasthenics in whom there is perversion of the sexual instincts, and, third, those who develop it as one of the symptoms and accompaniments in about 10 per cent. of the insane. The first class is cured as above stated, the third is generally confined in State hospitals, but the second class we have among us—namely, those with lesser neuropathic taints.

In the writer's experience those women not insane who have practised masturbation during a series of years have belonged to this class, usually with all sorts of functional nervous disturbances. In general, women who have practised masturbation long are not satisfied by normal sexual indulgence, although the desire which they have may lead them to such indulgence. Recently a woman has come under my observation who has practised

it for ten years. She has also at times had coitus, but never with gratification, and later resorted to artificial relief. Married women who have been masturbators seldom find gratification, and continue their practices during their married life. The same rule seems to be applicable to them as to men who are masturbators; they are impotent in attempts at normal sexual indulgence—differing in that with men masturbators; attempts at coitus are prevented by a premature orgasm, while in women the orgasm is not excited thereby. This is the rule with sexual perverts of all kinds—the normal act is not one of gratification, or they would not be perverts.

Nymphomaniacs, especially among the insane and mildly insane, are liable to resort to exposure of their persons or by lascivious movements in presence of men, and thus invite coitus. But among those not insane such acts are seldom openly indulged in, but secretly they are often shameless. All sorts of degenerate practices are followed by some. One of the most frequent is tribadism—the so-called “Lesbian Love,” which consists in various degenerate acts between two women in order to stimulate the sexual orgasm. Not an uncommon practice is the fondling of the genitalia of small boys and babies and contact of the same. In fact, the numbers and variations of practices are so various that it would take pages to mention them.

Girard (Kraft-Ebing) reports the case of a hysterical nymphomaniac who “at night, while the household was asleep under the influence of narcotics she had administered, she had given the children of the house to her lover for sexual enjoyment, and had looked on at the immoral acts. Before her nervous illness she had been a moral, trustworthy person; since her illness she had become a shameless prostitute, and lost all moral sense.” Schüle (Kraft-Ebing) finds very frequently an abnormally intense sexual impulse which disposes girls, and even women living in happy marriage, to become Messalinas. The same author “knows cases in which, on the wedding journey, attempts at flight with men, who had been accidentally met, were made, and respected wives who entered into liaisons and sacrificed everything to their insatiable impulse.” It would seem that women with nymphomaniacal tendencies who cohabit with men early in life before resorting to masturbation become the subjects of excessive venery. As soon as the gratification of coitus becomes known to them they become devotees to it, and continue to indulge it to excess.

A case in point came under my observation seventeen years ago. A young, vigorous woman of German parentage, twenty years of age, became engaged and was seduced by her lover. She had never masturbated, although whenever in men's company she had felt an almost uncontrollable impulse to kiss and hug them; she had, however, always controlled herself till she became engaged; she soon lost control in her lover's presence. After a year or more of excessive sexual indulgence he left her. From that day to the present she has never been able to control herself when alone with any man, and she has nearly ruined her health by excessive venery, but has never resorted to masturbation. She is now nearly forty years old and, although but a shadow of her former vigorous self, her passions are as uncontrollable as ever. Another, a young girl, fourteen years old, who never masturbated, gave herself to all the boys and men of her acquaintance, young and old, for nearly ten years, then married, but has never been true to her husband. These were not neurasthenics, neither had they any neuropathic taint. They both had unusually strong sexual desire when once aroused without the mental power to control it. Among this class of nymphomaniacs excessive venery is the rule. Among those who have practised masturbation long, excessive attempts at normal sexual indulgence are not common because unsatisfactory, and all forms of sexual perversions and gratifications to stimulate the desires are indulged in in the course of their excesses, which in time induce sexual neurasthenia, needing change of excitement.

Since writing the foregoing, which was intended to complete this paper, a case has come to me, a woman 31 years old, who began with epilepsy at 10, giving a history of injury to the head when a year old. She had epileptic seizures daily, often as many as four or five. During the past ten years she has taken some patent medicine, which controls it, and has had only four or five convulsions in the past ten years. Before puberty she began masturbating, and when 16 her clitoris was removed without result. At 21 she began taking the medicine which has controlled her for the past ten years. She has regained moral self-control, has not masturbated for nine years, and has no tendency to do so. She is engaged in clerical work and is a great help to her father in business.

My belief, then, is—judging from histories of many cases which I have collected but have not reported here—that nymphomania among mentally responsible and nervously normal women is rela-

tively rare; that the mentally irresponsible are more masturbators than given to excessive coitus, and that only the mentally responsible nymphomaniacs, as a rule, are addicted to excessive venery only when their sexual fall is early in life.

64 RICHMOND AVENUE

MYOFIBROMA COMPLICATING PREGNANCY; HYS- TERECTOMY.¹

BY

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(With one illustration.)

THIS specimen comes from Mrs. T., who has been married one year. She first presented herself through the kindness of Dr. Mead, on April 26, 1906, then single, thirty-four years old. Her previous history was uneventful. She was always regular, never flowed excessively, nor had any pain. She complained that there was an enlargement of the abdomen, and she was having some slight feeling of heaviness. She menstruated normally without pain, felt well, and looked the picture of health. Seven years ago she was told there was an enlargement of the womb. An examination now showed a solid tumor, filling the abdomen for 20 cm. above the pubes and 20 cm. in width. The cervix was felt high up behind the pubes, and a nodular mass filled the small pelvis, but could not be pushed out. The whole mass, with the cervix, was fixed. No corpus uteri could be felt. The diagnosis was a myofibroma. On June 1 she again presented herself. The measurements showed no increase. The size of the tumor, the fixation in the pelvis, and the youth of the patient, determined that I should suggest an operation. The patient, however, wanted to get married, and as both she and the intended husband, who is a physician, belong to an exceedingly intelligent class of people, the operation was deferred.

She was married, and on August 5 of this year (1907) she again presented herself, having gone over her regular menstrual period by two weeks, but was perfectly well, except a sense of abdominal

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fullness. Her last regular period was on June 25, 1907, when she had an excessive flow lasting two weeks. She still appeared in perfect health, but the tumor reached the border of the ribs and measured 27 cm. above the pubes and 23 cm. in width, a marked increase in size for fourteen months. On August 12 she again presented herself, complaining of very severe pain, and swelling in the left thigh and leg, so that she was unable to be about, and could lie down only with an elevated leg. All this occurred in about two days. On examination, the thigh was shown to be swollen and of slightly darkened hue. There was but very slight



Myofibroma with Pregnancy.

pulsation in the left popliteal artery as compared to the right, and the temperature was lower than the right, as shown by palpation. The abdomen and tumor were very tense and painful, but there was no fever. There was much intermittent backache and much upward pressure under the ribs. There had been no flow of blood.

With such threatening symptoms there seemed no alternative but the most prompt interference. The patient was evidently pregnant and the rapid growth accounted for all symptoms except the intermittent backache, which was explained when the specimen was examined after the operation. I have never been obliged to

destroy intrauterine life, though I have had many narrow escapes, but never to the detriment of the mother. This case left me no alternative. It is this fact that prompted me to report the case. To do an abortion through a long, narrow, and displaced cervix, gave the woman no chance, as the specimen will show.

The only thing to do was to remove the whole uterus above the cervix. On August 13 the tumor was removed through an incision of thirty cm. During the delivery of the tumor a large hematoma of the right ovary was broken and the peritoneum was stripped off the sigmoid flexure because of the adherent pelvic portion of the tumor. The operation was a simple supravaginal amputation. The left ovary was permitted to remain and the patient made an easy recovery, having at this time but little trouble with her left leg. The specimen, as shown here, measured thirty-five cm. in its vertical diameter, twenty-four cm. in width, and weighed 5,500 grams. The cavity of the uterus measured ten by twelve cm. and was filled with a grumous bloody fluid, in which, still attached to the uterus, near its right horn, was the ovum. It was covered by its decidua reflexa and was macerated to some extent. The amniotic fluid looked turbid, and no fetus was seen. The decidua was of a spongy, gray character, and easily removed from the uterine wall; in other words, the ovum was dead and the woman about to miscarry. There had been no discharge from the uterus because of the very elongated, contracted and tortuous cervical canal. The intermittent backache was accounted for by the attempted expulsion of the product of conception, which evidently killed the ovum. I am delighted to add that I have yet to be called upon to deliberately kill a fetus.

THE CONSERVATIVE MEDICAL TREATMENT OF SALPINGITIS.¹

BY

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THE writer is well aware that the subject of this paper will not be popular with the rabid operators, nor does he look for any sensational reputation by bringing so commonplace a subject

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before this body. Much perseverance, good judgment, and patience are often required to be successful. Not only the disease, but often the patient must be treated. However, all this will well repay the conscientious physician when he has saved the tubes and ovaries for a woman. This matter of conservative treatment of salpingitis is considered by many of the later text-books in a most nihilistic manner. Thus, a most excellent work attributes all good results to nature. Nothing helps us out so well as nature, but a little rational assistance goes a good ways. These books are kind enough at least to concede that good results are possible. Let there be placed in the hands of every practitioner such means as may result in some good. The surgeon need not be discouraged; there will still be enough bad cases for operation.

The subject is brought up for several reasons. First, to bring out a discussion on the subject which will be valuable to us all. Furthermore, to enjoin rash and uncalled-for mutilating operations with a high mortality, and with no absolute surety to our patient, that she will be well afterward, or from which she may take years to recover. For no one can prognosticate which case will get thoroughly well, and which one will remain an invalid. Those of us who have attended the medical meetings of two decades ago will remember with what derision those were treated who did not advise immediate operation for any acute pelvic inflammation. Their epithets were numerous, and the sarcasm they had to endure, both in public and private, knew no bounds. These men were called conservatives, with an exclamation or interrogation point. The writer, even at this day, looks for adverse criticism, if he has understood the trend of the discussion at our last meeting in Cincinnati. He writes this paper at the instigation of one of the most earnest and truth-seeking Fellows, and looks to him to open the discussion.

The writer is not giving you anything particularly new, but simply the principles and the technique under which he has been working for years. Let it be understood plainly at the outset that there are cases which need our surgical assistance, and when they need it it must be done quickly and thoroughly. Later on the writer will be obliged to speak of such cases, that there may be no misunderstanding in his position, and that the discussion may remain in the channel indicated by the title of his paper.

There are three forms of cases that come to us for medical treatment. First, the acute febrile conditions resulting from an

extension of a gonorrheal vaginitis and endometritis into the tubes and to the pelvic peritoneum. This forms the great majority of cases. The cases for treatment do not only include those of catarrhal salpingitis, but also those of a purulent character, since they are often enough simply different stages of the same disease. Second, the acute febrile form due to a variety of poisons following labor, abortions, and unclean intrauterine instrumentation; and, lastly, the results of inflammatory conditions following tubal abortions and coming to us late after the accident.

While the treatment of the first and second is about the same, in the last it will be that for chronic pelvic adhesions. It will hardly be necessary to say that medical treatment is not indicated for abscess of the ovary, due to any of the above causes, tubercular disease of tubes and ovaries, nor the extremely rare form of actinomycosis, ascaris, or echinococcus of the tube. There can be no question that women with gonorrheal pus tubes get well, if not anatomically, at least subjectively, and often enough to such an extent that a conception and normal puerperium takes place. Unfortunately, there are no statistics available to say how many women get well in this sense. Von Winckel¹ tells us that in non-gynecological postmortems he has observed 80 per cent. of pelvic adhesions.

Of the many cases uppermost in the writer's mind, because of the very extensive disease and because of his bad prognosis, it might be worth while to detail two, in short words. Both cases were seen by the writer in the acute stage of the disease, and were under his care for months. They were discharged well, but remained under observation for over five years. Furthermore, the writer was permitted to examine them after the birth of their children, and was unable to detect any residuary symptoms of their former disease. The last patient gave birth to her child a year ago. The first one has borne several children since the birth of her first.

The treatment of gonorrheal pelvic inflammation should be divided into three stages. First, the treatment of primary infection; in other words, the prophylactic. Second, the treatment of the acute tubal and peritoneal inflammation; and third, the treatment of the sequelæ. The treatment of the vaginal inflammation should be started by swabbing the whole vagina most carefully and thoroughly with a five per cent. solution of chloride of zinc

¹Behandlung der von Weiblichen Genitalien ausgehenden Endzündungen des Beckenbauchfells, etc., Jena, 1897.

recently prepared. This is necessary but once, and rarely a second or third time. It is best done through an old-fashioned hard rubber or glass cylindrical speculum, of as large a size as the vagina will tolerate. From twenty to thirty c.c. of the solution are poured into the vagina, through the instrument which has first been introduced so as to bring the cervix plainly into view. If the cervical canal or the uterus is affected by the disease, an applicator armed with cotton is introduced into the uterus through the liquid, thus carrying some of the solution into the cavity of the uterus. The speculum is now gradually withdrawn, leaving the fluid in its upper zone until the instrument is just within the grasp of the ostium vaginæ. The liquid is now allowed to flow out and the instrument again pushed up until the cervix is reengaged. The same quantity of fluid is again introduced and the procedure repeated. To secure as thorough an application of the medicament as possible, a swab of cotton is pushed through the liquid, urging it into every recess of the vagina. Through the same instrument the whole vagina is filled with a five-yard strip of iodoform gauze, three inches wide. As the gauze is inserted, the speculum is gradually withdrawn, so that no gauze packing ever remains in the speculum. The gauze should be left in for three days and then withdrawn. Large douches of potassium permanganate 1-2,000 are now ordered twice daily.

Renewed applications of the gauze may be called for, but it is rarely necessary. As a rule, repeated applications should be avoided, as they often prove harmful. When the endometrium is much infected, as shown by a copious mucopurulent discharge, our first object must be to secure good drainage. When there is a small os internum or externum, it should be dilated with steel sounds, and a narrow strip of iodoform gauze introduced. As soon as there is a wide opening, the writer has for the last eight or ten years, followed the advice of Professor Grammaticati of Tomsk, Siberia, and injected into the uterus drop doses of a 5 per cent. solution of alumnol in half-strength tincture of iodine, thus:

R Alumnol 5.0
 Tr. iodine.
 Alcoholaa 50.0

It will hardly be necessary to say that such patients should be kept in bed, or at least on their backs, for an hour or longer

after the application. If one drop is borne well, two or three may be injected the next time. The writer has never seen much good result from a curettage in these cases, unless they were accompanied by a hyperplastic condition of the endometrium. But this is all preliminary and preventive, though no less important, than the treatment of the inflamed tubes and pelvic peritoneum.

When a salpingitis of the acute form is established, the recumbent posture should be urged. Pain and temperature demand an ice bag placed above the pubes, and will assure much relief. Opiates are thus avoided. As soon as the temperature, as taken by the rectum, is below 101° , we should remove the ice bag. Nothing will reduce pain and an acute exudate more quickly than the application of cantharidal collodion to the roof of the vagina. It is important to make the application carefully, so as not to allow the irritant to flow over the lower part of the vagina. The application should be made either through a Sims speculum, with the patient on her side, or through the old Ferguson speculum. An applicator is armed with a bit of cotton, and carries the collodion around the cervix. Before there is any chance of its flowing down the vagina and irritating the vulva, a dry cotton tampon is pushed up. It is not well nor necessary to apply the collodion too freely. The cotton tampon is removed in four hours and copious hot douches ordered. There will be an immense amount of muco- and seropurulent discharge for several days, and great relief from pain. The writer always makes the application on the first indication of a swollen tube or an exudate.

When a second application is called for it should not be repeated in less than six days. On the second day after the application the roof of the vagina is painted with Lugol's solution of iodine, and a glycerine tampon placed over it, to be retained for from six to twelve hours. The glycerine is applied daily, and the iodine once in three or four days. The glycerine is easily enough placed by the patient herself with a Thomas applicator (cupping cup). The writer is of the opinion that glycerine affects the parts as well as ichthyol, and is much cleaner. After the removal of the tampon, large hot douches of potassium permanganate are ordered, the patient lying flat on her back, preferably on the floor or table, but not in bed. This is advised so that the hips may be properly elevated, and the upper part of the vagina filled with the hot fluid. Plain hot water at about 110° is used when there is no virulent discharge. No hot douche should be used immediately before any application.

All this treatment for the acute salpingitis takes precedence over any treatment of the vagina, even when gonococci are still demonstrable there. When the fever has subsided, and there is still pain and heaviness in either iliac fossa, a fly blister one by one and one-half inches is placed directly above Poupart's ligament and near the middle line. While blistering has been a favored remedy with the writer ever since he began to practise medicine, he was always shy to speak of it because of adverse criticism, and because of the failure for a reasonable explanation of its beneficent influence. Now that it is known that a blister produces local hyperleukocytosis, a physiological explanation is offered. It is not uncommon to see a large edematous exudate melt away under a blister, especially when applied to the roof of the vagina. This sort of treatment should be continued until all sensitiveness of the pelvic contents and fever have abated. It may be said that this treatment is rarely objected to, even by sensitive patients. With this a cure is not established, for we cannot yet expect an absorption of adhesions, and thus a freely movable uterus, tubes, and ovaries.

The glycerine tampon and its accompanying technique is now dropped, and one of an elastic material made of picked oakum, jute, or lamb's wool, covered with a film of cotton, takes its place. Once in four days the roof of the vagina is painted with Lugol's solution of iodine, wiped dry, and subnitrate of bismuth powdered into the vagina. The oakum tampons are now introduced, and as much pressure made as the patient will bear. It should be our endeavor to increase this pressure every time the patient comes to us. These tampons are left in place for two days, and after their removal the patient is directed to use hot douches, not above 105°, while on her knees and elbows. During all this time of the subacute stage no bed rest is necessary, for the patient may come to the clinic or our office, but she should be guarded against fatigue, and rest is enjoined during the first forty-eight hours of the menses. Sexual intercourse has, of course, been prohibited all through the disease. It should not be forgotten that such patients should have free and easy evacuations from the bowel, preferably produced by a saline cathartic. If the uterus is large she is given ergot and potassium bromide in medium doses, three times daily, the latter for the purpose of reducing any sexual excitement or inclination.

While the massage of Thur Brand has been of some use, and

very efficacious in many hands, the writer has used for many years rubber bags filled with mercury, of various shapes and sizes for the same purpose. The rubber bag filled with mercury is placed into the vagina, the patient being on her back, with a pillow under her hips, or else in a moderate Trendelenburg posture. The mercury pressure is continued until it becomes annoying. The pressure is gauged entirely by the patient's sensitiveness. A second bag is placed on the patient's abdomen, just above Poupart's ligament. The seance lasts from one-half to two hours, and can be applied by almost any office nurse. Recent adhesions and exudates are rapidly absorbed by such treatment, and old adhesions are often stretched and made to yield, so that a more freely movable uterus, tubes, and ovaries results, with much subjective benefit to the patient. But it is in just these cases that we so often fail and where surgical intervention becomes desirable to alleviate suffering.

When we have relapsing attacks of pelvic peritonitis this is not applicable. Constantly relapsing attacks will be found to be the result of great menstrual disturbances or severe physical fatigue, or of violent sexual intercourse, thus possibly a reinfection. While one or two exacerbations are frequent and need not disturb us, many repetitions are most likely fatal to the patient's well being, and the removal of the offending organs should be considered.

As a preventive for tubal inflammations following septic endometritis in late abortions, miscarriages, and at term, the writer knows of no better treatment than the alcohol drain spoken of before this Association at its meeting in 1900. When the pelvic disturbances become worse, in spite of our endeavors, and thus the health and life endangered, we have no resource but surgical means. Whether this means a vaginal drainage, vaginal total extirpation, or a celiotomy, does not belong to the scope of this paper. This much the writer knows, that the operations have become less and less frequent in his hands, and mutilations spared to many a woman.

1002 BROAD STREET.

CONSISTENCY IN ASEPTIC SURGICAL TECHNIQUE.¹

BY

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THE subject of this paper may seem rather elementary for this Association of practical surgeons; nevertheless, success in all surgical work, as in the usual affairs of life, depends upon the care and exactness which we apply to the details of our work, and if we look back upon that period prior to the development of aseptic precautions in surgery, and compare it with present-day methods; and the results of those days with the results of the present time, we can better appreciate the incalculable blessing that the research and study of asepsis, as applied to surgical work, has been to mankind. While, of course, it has increased the amount of work prior to and during the operation, it has so lessened the mortality and morbidity, as well as the after care, and especially the anxiety over our patients, that surgical work to-day is one of the most satisfactory of professions, and is rapidly coming to what might be called on exact science.

It is not my purpose to deal with the many minute details of asepsis as applied to surgery, but rather to invite attention to some inconsistencies which seem to exist, and plead for a more uniform and consistent standard, for, in the words of that great master, Professor Kocher (Kocher's Operations Lehrer, Fifth Edition), "Alle Kunst des Chirugen ist umsonst wo die Infection nicht angeschlossen ist." (All the art of the surgeon is in vain if the infection is not prevented from gaining entrance.)

It has been my experience in observing the work, and noting the percentage of mortality among surgeons of experience and equal grade of standard in surgical ability, that there exists among them a difference in mortality rate and morbidity rate which, considering the fact that these men are equally gifted in surgical skill and judgment, must be due to consistent and thorough aseptic technique upon the one hand and less skilled and inconsistent technique on the other. How often do we hear of certain

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

careful and painstaking surgeons having a run of from 100 to 300 operations without mortality, such as Dührssen with his 267 abdominal and 500 gynecological operations without a death, Kocher with from 300 to 500 thyroidectomies without either loss of life or failure in obtaining primary wound healing, Moynihan, the Mayos, and others with their long series of stomach, intestinal, and gall-bladder cases without unfortunate results, or the work of Jacobs, Kelly, and Robb in the gynecological field! On the other hand, equally good surgeons in every respect, except in aseptic technique, will have two, three, five, or greater percentage of mortality in similar lines of work.

I have long believed that this difference constitutes the difference between consistent and inconsistent asepsis. In making this criticism I would not underrate or minimize the great necessity for speedy and rapid surgical work in the interest of the patient, for, next to careful asepsis, speedy work, coupled with thoroughness, has done more to lessen mortality than any one other thing, and I believe that all operative work should be, in the interest of the patient, conducted as speedily as is possible, consistent with efficient and careful surgery. An operator should always endeavor to be speedy, but never hasty or careless. Speed should be the achievement, not the aim, of the operator, and is only obtained after years of experience in the operating room, and that coupled with an intimate and perfect knowledge of anatomy.

Can there be anything more lamentable or associated with greater risk to the patient than an unskilled, inexperienced operator endeavoring to perform operations with the same speed as one who has had years of experience and training? Neither would I underrate those great studies with reference to the resistance to infection, such as phagocytosis, and the like, which have done so much for us in our knowledge of how to handle already infected cases, but I contend that in all clean and uninfected cases, as well as those already infected, we should be so consistent in our asepsis that the former group of cases will not be compelled to depend upon their leukocytes for their recovery, and in the latter class of cases a new element of danger in the form of a mixed infection will not be introduced.

I also contend that a surgeon should so perfect his work that he would be able to perform it equally as well amidst the primitive and uncertain surroundings of a country farmhouse or city tenement, as he would be surrounded by the equipment of the

operating room of his hospital; for, as we begin to realize more and more the great danger in contact infection, and the minimal danger of air infection, so do we have less regard for the environment of marble and mosaic and more regard for the things which come into direct contact with the wound; and so does it become incumbent upon any surgeon who does work at various places distant from his own operating room to perfect a technique for that work which shall be as consistent and thorough as the technique at his hospital. To do this, however, he must develop a systematic plan and use his general hospital, or, better yet, his own well-governed private hospital, as a starting point, having there everything required for the operation thoroughly and freshly sterilized, packed in cases, lined by sterile sheet, and so arranged as to be dustproof when closed. All this should be done by a competent nurse, whose duty it is to not only see that all materials for the operation are properly prepared, sterilized, and packed, but who shall go along to the place of operation and attend to the unpacking and placing of all instruments and materials. Such a nurse easily becomes your first, and often only assistant, except the anesthetizer, at such operations, and should be one who has had years of experience in surgical work and surgical asepsis. If she is conscientious and honest, her services become invaluable, and she is more consistent in the aseptic measures than a male surgical assistant, who may be thinking more about the diagnosis and operative technique than about the aseptic technique and how to transform the ordinary kitchen, parlor, or bedroom into a safe and convenient operating room.

To my mind nothing is more inconsistent than to see a surgeon operating at a distance with materials prepared and packed by some dealer in surgical supplies, or by the force in some hospital, who have no further interest in the case than merely getting the equipment ready. In my own work the question of all assistants is eliminated as much as is consistent with doing proper surgery, for I believe that each additional assistant is a potential source of infection; hence, to do the best and cleanest work, these assistants should not be frequently changed, but should remain with the operator for years. Here again is the well-trained nurse a better assistant, for it is possible to retain her services over many years: whereas the young surgeon with ambition will only serve as an assistant for a moderate period before he becomes restless and anxious to start out for himself.

The surgeon who occupies a position as a teacher or instructor in a medical school connected with a hospital where medical students are instructed in surgery, cannot be as consistent in his asepsis as the one who has no such position, from the fact that he must needs, for the sake of instruction, have a constantly changing force of assistants, and no sooner does he get one force thoroughly competent than he is compelled to relinquish them for the sake of teaching others. As we observe the work of those surgeons who have the least amount of mortality or morbidity from infection, we are impressed with the fact that they are men who do their work with as little change of assistants as is possible, and who work in institutions where there is none, or only a moderate amount of teaching, and who have, by reason of owning or controlling the institution, absolute domination over the operating room.

As a proof of this assertion I would refer to the work of Dr. Price of Philadelphia and that of the Mayos, the latter men working as they do with trained sisters, who have been with them for years as assistants, and trained nurses as anesthetizers who have become so proficient by long experience that their equal is hardly to be found in the medical profession. This, to my mind, constitutes one of the great reasons why these men can give us such long, uninterrupted series of operations, unbroken by death or infection.

On the other hand, how impossible it is for the surgeon who has a frequently changing force of assistants, who is in control of the operating room at certain hours only, and knows little of the amount of infection that has been distributed throughout that room during the preceding hour, to be able to do as consistent aseptic work. The wonder is that they do not have more sepsis than they do, and it is not infrequently that we hear of some patient being operated on at some such institution for a condition in which no infection exists, and in a few days the news of the death comes to relatives and friends, who are told that it could not have been prevented, as "blood poisoning set in," whereas we know that blood poisoning did not "set in," but was put in at the time of the operation.

Consistent asepsis demands, to my mind, the necessity of always wearing sterile rubber gloves during the performance of operations, the ease with which one becomes accustomed to them being marvelous; even that diminished sense of touch, which first

exists, seems to be dissipated in time. Great care should be exercised that no glove with a rent or hole in it be worn, for I am afraid that the necessary expense of gloves renders it probable that at times they are worn long after their usefulness has passed and after they have become an absolute source of danger. But important as the question of wearing rubber gloves during operations is, I believe that it is equally, if not more important that every operating surgeon should protect his hands from coming in contact with infectious material between operations by the use of thin rubber gloves when making all examinations of infected wounds, post-mortem examinations, dressings, and in examinations of vagina, rectum, and throat. By so doing we, to a very great extent, eliminate the danger of our hands becoming contaminated with other organisms than the staphylococcus albus, their usual inhabitant, the latter according to some excellent authorities (Kocher, Lomz, Flock) having very little pathogenic importance.

Certain it is that the pathogenic organisms which are implanted upon our skin and rubbed or pressed into the ducts of sweat glands and about the hair bulbs at the time of examinations of infected areas are the most important source of danger; hence the necessity of wearing rubber gloves between operations to protect the hands from becoming contaminated by such virulent organisms—that is, as far as is possible—and this is to my mind the most essential secret of hand sterilization. And in conjunction I would strongly advise the careful and painstaking care of the hands by washing, scrubbing, and care of the nails upon the evening prior to the day of operation, as well as before operating, and to my mind the use of all nail cleaners, such as orange-wood sticks, and the like, are evidences of dirty conditions, for anyone doing surgery, or assisting at surgical work, should wear close-cropped nails incapable of harboring dirt beneath them.

Hands should be scrubbed with brush, soap, and running water until they are clean, and not until the hands upon a clock have measured off a certain portion of time. This plan, followed by a careful scrubbing with a 65 or 70 per cent. alcohol, the latter being carefully worked into every portion of skin and allowed sufficient time to get into the sweat glands and hair bulbs, affords an efficient sterilization, which can be followed by other antiseptic solutions if so desired by the surgeon.

The foregoing precautions constitute proper prevention of

infection from the hands of the surgeon. I wish we could do as well in sterilizing the skin of the patient, for here exists the weak point in operative work, as it does not appear that any of the protective tissues which have been devised have come into any very uniform or practical use. Nevertheless, after a thorough cleansing and sterilization of the patient's skin, great care can be exercised in limiting the amount of skin exposed and in keeping the wound edges covered with gauze; also in being careful to avoid using the same knife that has been used for skin incision for any of the deeper work, or to allow ligatures or sutures to come in contact with exposed skin. In these ways it is possible to limit and almost overcome the danger of implanting infection from the skin to the deeper layers.

One very common cause of danger consists in improper management of sterilizers by those who do not thoroughly appreciate the necessity of packing the instrument so as to permit a proper penetration of the steam to all of the contained packages. Certainly we cannot expect proper results unless the instrument has a proper amount of space for steam between the packages of dressings and other articles which it contains. It is important that we should use freshly sterilized goods, direct from sterilizer to operation, and in this way prevent the possible evil consequences from contamination during an interval between the time of sterilization and the time of use. When possible, fractional sterilization should be practised, but this is not always necessary. Yet in my own work we always sterilize twice the gauze, sponges, dressings, towels, and the like, which are to be used upon clean abdominal, pelvic, or joint cases, and we have never had occasion to regret the moderate increased amount of work that this occasions.

The question of sterile ligature and suture material is one of vital importance, and should be controlled entirely by frequent bacteriological examination of the materials we are using. For the past two years I have used the iodine catgut (Bartlett process) in all cases where infection exists at the time of operation, but I much prefer in all clean cases to use silk or linen, knowing as I do that there can be no question of its sterility, that being provided for by steam sterilization just prior to the operation, and I have never had occasion to regret using linen or silk in all of my clean work; but in using it I am very careful to avoid drawing it through hands that are not thoroughly gloved, lest by doing so it becomes infected.

In closing wounds great care should be exercised to properly approximate tissues of a similar character and avoid dead spaces which might later become the seat of infection, using a strong but light subcutaneous silver suture wire for approximating the skin edges. In all cases where there is any subcutaneous oozing, or where it is impossible to be assured that all dead spaces are eliminated, a small Kocher glass drain is slipped between the edges of the *closed* wound and removed the following day, for to get primary union and freedom from infection it is necessary to have well *coapted*, *clean*, and *dry* wounds. All of these details require time and perseverance upon the part of the operator, but they constitute more complete aseptic technique, and if coupled with painstaking and thorough surgical work it will bring to each one of us a consciousness of having done our part well, and we will be rewarded by a very low, perhaps only fractional, mortality and an easy and uninterrupted convalescence on the part of our patients.

295 MILL STREET.

DECIDUOMA MALIGNUM.¹

BY

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(With four illustrations.)

UNTIL comparatively recently the term deciduoma malignum was used to designate all malignant neoplasms originating at the placental site, but since the investigations of Säger, Marchand, Teacher, and others, we know that some of these growths are carcinomatous, some sarcomatous, and some, perhaps, a mixture of both. Hence it would serve better to name each specimen according to the microscopical findings. Inquiry into the exact nature of these tumors is, however, more interesting than profitable. The important thing is to be able to recognize early the malignant nature of the trouble, when a complete hysterectomy will offer the patient a good chance for permanent recovery. An

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

important fact to be remembered is that metastases occur equally early in all types of the disease via the bloodvessels. This fact emphasizes the especial importance, in this class of malignant neoplasms, of making every endeavor, by means of clamps, ligatures, and a minimum amount of handling of the tumor, to prevent dissemination of the cells by the veins during the operation.

It is a well-known fact that not infrequently microscopists disagree as to the malignancy or nonmalignancy of a neoplasm, each basing his opinion on an examination of the same specimen. It is also well known that specimens removed for examination prior to operation may fail to show malignancy, when specimens

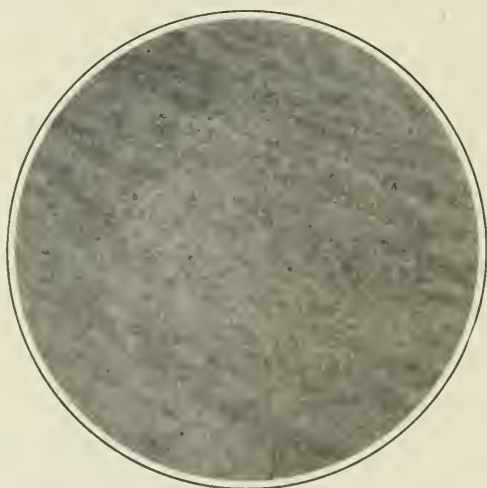


Fig. 1.—Section Made Through Center of Uterine Wall Showing Infiltration of Muscle.

from other areas leave no doubt as to the malignant nature of the growth. Histologically, all chorioepithelial proliferations are malignant; hence, a prognostic valuation of the microscopic picture is at present impossible.¹ These facts, taken together with the further one, that the disease under consideration may get beyond all hope of cure within a few weeks, warrant the statement that too much importance may be attached to the microscopic findings, and that, in case the clinical signs point strongly toward malignancy, hysterectomy should be performed, even though the microscopic findings are negative.

It may be true that the following of this advice may result in a

¹Schmauch, "Surgery, Gynecology, and Obstetrics, Sept., 1907.

few women being unnecessarily deprived of their uteri and appendages, but is not this better than that one should die as a result of delay in diagnosis and operation? The following case is herewith reported as illustrating some of the foregoing points and as the basis of some further remarks.

Mrs. L. R., age 40, married, four children, consulted me March 23, 1907, complaining of pelvic distress and great loss of strength. She was quite anemic. Menstrual periods had been regular, the last occurring one week before her visit to me. This period was peculiar, in that it came on with "a gush of blood-stained water," but in all other respects was normal. Her physician, Dr. L. P.



Fig. 2.—Section Through Uterine Wall Showing Invasion of Muscle by Cells.

Drayer, had noted a tumor in the hypogastrium, and had referred her to me. On examination I found the uterus as large as my fist, quite soft, and tender to pressure. There was no vaginal discharge. I could not satisfy myself as to the diagnosis, and sent the patient home with the request that she report again in a week. This she did with the report that the pelvic distress and weakness were greater. On examination it was also found that the uterus had perceptibly increased in size, and that the anemia was more pronounced. There were no new developments.

The patient was sent to Hope Hospital, March 31, 1907, where the following record was made: "Family history, negative. Has

had all children's diseases, and six years ago had quite a serious illness of which she does not know the nature. Has had pain in left pelvic region for six years. Since last June this has been severe. 'Noticed a tumor' in the region of the uterus 'about a year ago, which has grown considerably in the last few weeks.' Complains of pelvic pain in left side, and weakness." Examination: "Anemic. There is a grumous vaginal discharge which came on a few hours after she reached the hospital. The uterus is as large as a large fist, and perceptibly larger than when I first examined her, a week ago. The os is not open, the cervix not soft, and there are no uterine contractions." During the two days prior to the operation the pulse ranged from 80 to 94, and

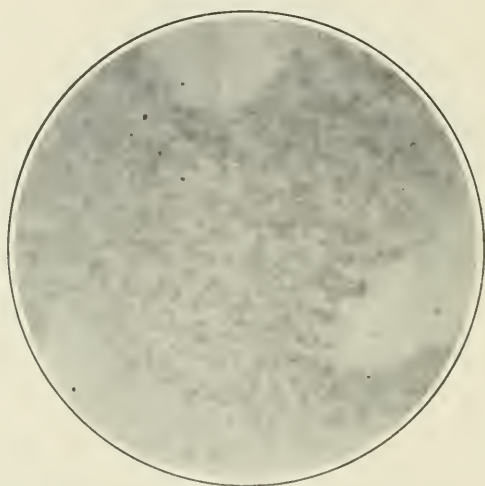


Fig. 3.—Section through tumor.

was soft and weak. Temperature normal. On April 2 (two days after entering the hospital and ten days after she first consulted me) I carefully removed a fragment from the uterine cavity with the curet, under ether anesthesia. The specimen removed was as large as the tip of my index finger, reddish, and semitranslucent.

The specimen was given to Dr. Rhamy for microscopic examination, the patient taken back to her room, and another brought in for operation while awaiting Dr. R.'s report. The specimen was reported as malignant and probably "lymphendothelioma." Accordingly, the patient was returned to the operating room and

the uterus and appendages were removed by the abdominal route. The peritoneum was closed over the vagina. The abdominal wound was closed in the usual way and a gauze drain placed in the vagina. The patient made an uninterrupted recovery, was discharged April 28, 1907, and remains well to date.

An examination of the uterus after its removal showed it to contain two amniotic sacs, one of which was separated from the uterine wall, the other attached, and neither ruptured. The uterus also contained a quantity of material of the same appearance as the specimen removed by the curet. The uterine walls were everywhere abnormally thick, soft, and friable, especially

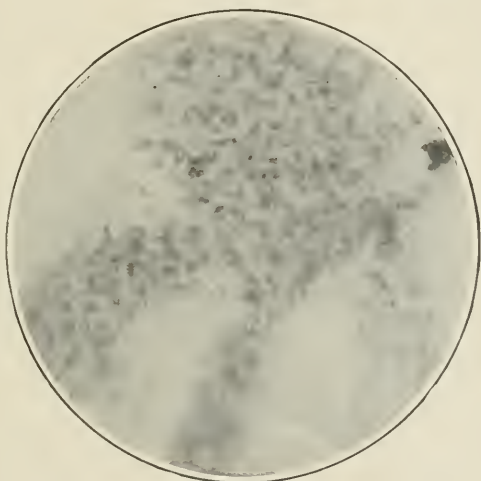


Fig. 4.—Section through tumor.

at the placental site. Dr. Rhamy's report on the specimen removed at the operation is as follows: "The decidua from a twin pregnancy is thickened, soft, fragile, and spongy, with areas of diffuse bloody infiltration. The decidua is diffusely hypertrophied, there being no sharp limitations of the cellular hyperplasia. There is general infiltration of the uterine muscle by the syncytial cells and cells from the layer of Langhans. Many giant and many small cells are seen especially along the blood sinuses with the result that the uterus is doughy in consistence. Diagnosis, decidua malignum, syncytioma malignum." The gross specimen is herewith presented for your examination, together with photographs of the microscopic sections. (See Figs. 1, 2, 3, 4, and 5.)

It will be seen from the specimen that I underestimated the size of the uterus at the examination prior to operation. The size has been considerably reduced and the consistency increased by the solution in which it has been kept. A couple of the slides were sent to the Columbus laboratory, from which the following report came: "We find no evidence of syncytioma in these sections. The superficial area is composed of glands and decidua. This zone is greatly thickened over the normal. This thickening is due to glandular proliferation and dilatation, and to decidual growth. The decidual and glandular zones show no disposition to invade the underlying zones in the areas from which these sections were made."

Upon the receipt of this report another slide was sent to them, together with a history of the case, with a request for a pathologic diagnosis, and the following report was received from Dr. Evans: "I cannot find invading cells. The abundance of dilated glands is very much in evidence. I do not think that the sections indicate chorioepithelioma or malignant deciduoma."

That the uterus in this case was abnormally large, soft, and friable, there can be no question of doubt. That the woman was seriously ill is equally certain. That there was an abnormal glandular and decidual growth both microscopists agree, but the one says that the trouble is malignant, and the other that it is not malignant. The question naturally arises, what is the essential character of the trouble in this case? The hyperplasia might be caused by infection, but the woman was clearly not septic, and the microscopic evidence of an inflammatory process is entirely wanting. A nonmalignant glandular and decidual growth such as obtained in this case, with death of the new-formed cells and autointoxication arising therefrom, offers a possible explanation for the symptoms and conditions found, but such a combination of cause and effect has not been described, to my knowledge, in medical literature. Personally, I believe that the correct diagnosis in the case reported is chorioepithelioma malignum. If this opinion be correct, the fact that the diagnosis was made during pregnancy, and that the latter was of the twin variety, makes the case unusual, if not unique.

In conclusion, I want to say that with increasing experience my conviction grows firmer that the clinical and macroscopic findings in suspected malignancy should be given equal, or even greater weight than the microscopic findings, and that when

the former point strongly to malignancy the patient should be given the benefit of the doubt, and a radical operation performed, even though the microscopic examination is negative; for it is better that the patient live and the diagnosis remain in doubt than that she die with the diagnosis decided. A free and frank discussion will be appreciated.

207 WEST WAYNE STREET.

AN UNUSUALLY LARGE DERMOID TUMOR OF THE OVARY.¹

BY

WILLIAM H. HUMISTON, M.D.,

Cleveland, Ohio.

(With one illustration.)

NAME, Mrs. G., Wooster, Ohio, age 51. History—Married 30 years. Has given birth to two children at term, the youngest 17 years of age. No miscarriages. Occupation, housework. Her first menses appeared at the age of 13 years, occurred regularly, without pain, and the duration was four days. Her last menstruation occurred during January, 1906. She has had a slight leucorrheal discharge for a great many years. General appearance bad; very much emaciated, complexion sallow. Sleep disturbed and very restless for past six weeks. Appetite and digestion poor. Bowels constipated; urination frequent, but painless.

She was referred to me, and came complaining of the following symptoms: General distress and weakness from a large growth in abdomen, which she first noticed seven years ago in left side, where a mass could be felt. The pain was intermittent, but the growth steadily increased until the abdomen was much larger than pregnancy at term, when she entered St. Vincent's Hospital. Obstinate constipation, pain in right side extending down into pelvis, backache, and vomiting frequently after partaking of food, are the prominent symptoms.

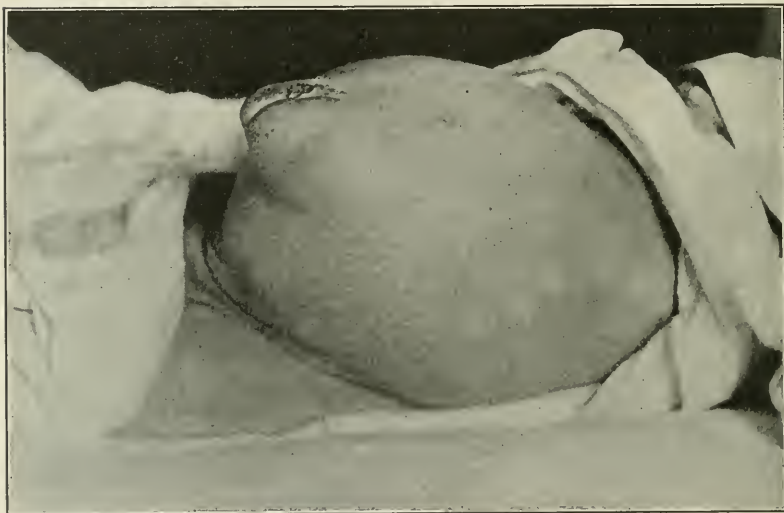
As before stated, the patient first noticed the growth seven

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

years ago, but did not pay any attention to it, until two years ago a physician was called, who advised immediate operation. This was refused. Her general previous history is good.

Family history.—Mother died from cancer of stomach at age of 62; father of old age; two sisters and four brothers living and in good health.

The physical examination of pelvis and abdomen revealed a partial tear of the perineum, vagina roomy, the cervix could barely be touched with the finger, and all the vaginal vaults were free from encroachments. The uterus and appendages seemed to



Dermoid Cyst of Ovary. Weight 31 lbs. Large ventral hernia with erosion of skin.

be lifted out of the pelvis by the large, fluctuating elastic growth that reached from the pubes to the ensiform cartilage. The flanks were resonant. Dulness over distended abdomen was general. A ventral hernia as large as an orange, with an eroded spot, the size of an almond nut, was observed. Temperature, 99 2-5°; pulse, 90.

Blood examination.—Reds, 4,300,000; whites, 20,600; hemoglobin, 50 per cent. to 60 per cent. Urinary analysis—Color, brown; sp. grav., 1,020; reaction, acid; albumin, slight amount. Sugar—Epithelium, few. Leukocytes, few. Diazo—Phosphates amorphous, and bile. Casts, *granular*, and *hyaline*, many.

Diagnosis.—The symptoms in this case, together with the history and examination rendered the diagnosis of ovarian cyst with suppurating contents, quite probable, hence operation was advised. This was readily consented to by the patient and family. She was as anxious now to have it done as she was decided in her opposition to it for many years, owing to the serious illness of her son with chronic Bright's disease, who she said needed her care and attention.

Operation, October 31. 2 P.M. Ether anesthesia for one hour, 10 ounces being used, drop method. As soon as patient was placed on the table the submammary injection of normal sterile saline solution was begun and kept up until two liters had been introduced. Incision in median line between ventral hernia and pubes. Adherent omentum in hernial sac was freed, ligated, and cut. Trocar inserted into cyst, which had a thick wall. The contents was cream-colored, and pea soup in consistency. The incision was enlarged and the hernial sac removed by an oval incision. The tumor and the remaining contents were delivered and found to contain four balls of hair and several collections of teeth. It was found to arise from the right ovary, and the sac was closely adherent to the side of the enlarged uterus to the fundus. Supravaginal amputation of the uterus was made and the tumor sac and uterus removed together.

A malignant looking mass, the size and shape of a turkey egg, was found in the colon, at the junction of the sigmoid and rectum, with considerable fecal accumulation above, that could not be forced through with moderate pressure. Another mass, equally large, was found in the ileum to right of median line, also the third one, on lower border of liver. It was not deemed advisable to prolong the operation under existing conditions, and the cervix was closed, and over this the peritoneal edges were united, leaving the pelvis entirely free from raw surfaces. The abdomen was flushed freely, four liters of saline solution being left in the abdominal cavity, and the incision closed. Patient left the table in good condition. Color of mucous membranes, red; pulse and respiration good.

She had a good night; no vomiting and free excretion of urine, which contained albumin and many granular-hyaline casts. Pulse and temperature next morning, 96° and 99, respectively. Complained only of a moderate amount of pain, and stomach retaining water, frequently given in small quantities. About noon the nurse

noticed the pulse growing weaker. In spite of special heart tonics and stimulants administered hypodermatically, the patient expired at 4 P.M., twenty-four hours after operation. There was no change in temperature and no symptoms of hemorrhage. Autopsy was not permitted.

This dermoid tumor is unusual as to size, but very few having been reported as large. In looking up the subject, but three were found giving exact weight.

Corealiagant in *Review de Normandy* reports a dermoid cyst weighing 50 kilos—110 pounds.

Keith, 1896, one weighing 100 pounds.

Ullman, *Wiener Med. Press*, 35 pounds.

PATHOLOGICAL REPORT BY DR. J. H. HEWETT, PATHOLOGIST TO ST.
VINCENT'S HOSPITAL.

Mrs. C., age 51. Dr. Humiston.

October 31, 1906.

Pathological No. 825.

Clinical Diagnosis.—Ovarian cyst; suppurating contents.

Pathological Diagnosis.—Malignant dermoid cyst of the ovary; carcinoma with metastases into the uterus.

The specimen consists of a uterus and an attached cyst sac. The uterus is irregular in shape, being considerably larger on the right side than on the left, and its surface is somewhat nodular in appearance. Its consistency is, in general, firm, but on its surface, appearing as white, round, discrete, and confluent points, measuring from 1 to 3 mm. in diameter, are numerous areas that are soft and slightly fluctuating. A section over one of these small areas shows it to be a small cavity filled with white, necrotic, creamy material.

The uterine wall measures 2.5 cm. in thickness. The mucous membrane is of a grayish white color. Extending from the top of the fundus and the lower portion of the cervix are polypus growths about 1 cm. in length; otherwise the mucous surface is fairly smooth. The left tube measures 8.5 cm. in length. The mucous membrane appears normal. On the posterior surface of the tube are two small, irregular-shaped, translucent bodies, situated near the fimbria.

The left ovary measures 2x1x.5 cm. Its surface is of a white color, markedly contracted and furrowed. It is very firm in consistency, and on section is seen to be very sclerotic and slightly

cystic. The left tube is obliterated and its course can, with some difficulty, be made out as a dense fibrous cord. Arising from the lateral and posterior surface of the uterus, and adherent to it by dense fibrous adhesions, is a large sac, 32 cm. in diameter. In the adhesions, and on its surface nearest to the uterus, are several round, white areas, like those described on the surface of the uterus.

The external surface of the cyst sac is, for the most part, smooth, but in certain places it has a very contracted and shriveled appearance. A few clear, translucent cysts may be seen in the wall. The thickness of the cyst wall varies from 1 to 5 mm. The inner surface of this wall is thrown into numerous folds. These are of a diffuse red color and show numerous hemorrhagic points. In the lower part over the portion attached to the uterus is an area about 5.5 cm. in diameter, surrounded by an elevated ring of tissue. Over this area there are several scales of bone and small pieces of cartilaginous tissue. A few centimeters above this area is another fringe of tissue, from which numerous hairs are growing, and in it may be felt a piece of bone about 3 cm. in length. On this bone is a cluster of three teeth, two bicuspid, and one canine.

The cyst with its contents weighed 27 pounds, without the escaped fluid which was soaked up in sponges, and was estimated to weigh 4 to 5 pounds. Its contents consisted of 6 to 7 liters of light grayish-green, creamy fluid. A piece of bone 4 cm. in length, containing a cluster of five teeth (three molars, one bicuspid, and a wisdom tooth), a single canine tooth, a molar and bicuspid tooth bound together, a large amount of hair that was rolled up into four balls, were removed, together with, and in addition to, the fluid.

Microscopical Examination.—The fluid from the cyst showed it to consist of fat droplets, flat, epithelial cells, broken-down cells, red blood cells and a few leukocytes.

Cyst wall measures about 4 mm. in thickness, and is seen to be made up of from two to four separate layers of about the same thickness, respectively. The inner layers are made up of connective tissue that has undergone hyaline necrosis, and has completely lost all the nuclei. The outermost layer in its outermost portion shows definite connective tissue bands with an arrangement like that seen in arteriosclerosis. Along the inner part of this layer the fibers have undergone necrosis, and are

coarser, and less numerous, markedly resembling fragmentation myocarditis. The picture here suggests that the original tumor was made up of several cysts, but in the process of growth the present cyst gained the supremacy. The other cysts were thus compressed and only their walls left in the common wall of the exhibited cyst.

Hair covered projections from the cyst wall, into the cyst cavity, were observed. These are seen to have a basal structure of dense connective tissue. On the lining surface is seen a layer of stratified flattened epithelium, in many places projecting as villi into the cavity. There is little if any evidence of infiltration of the subjacent tissues with these cells in the portions examined. They are quite loosely arranged. Examination of other portions of this tissue show it to be made up almost entirely of loose necrotic material, with an occasional single or clump of round, flat, epithelial cells.

Abscess cavities on the wall of the uterus. The wall here is seen to be made of uterine muscle surrounding areas of flattened epithelial cells, which are definitely and unmistakably of a carcinomatous type. These cells are apparently more of a growth in lymph spaces than infiltrations into and between the muscle fibers. The question arises, are these carcinomatous areas due to an extension along the lymph channels of cells from the lining membrane of the cyst sac, or are they only the result of epithelial anlage in the uterine wall. At present I think we are not able to definitely say which is the case. By taking sections from successive portions connecting the uterus and the cyst, an effort is to be made to determine this point. The fact that these carcinomatous areas are all confined to the upper portion of the uterus and to the same side as the cyst, and occur also in the adhesions between the cyst and uterus, somewhat favors the first view. Still, it is possible that invasive growth may have taken place from the uterus toward the cyst as readily. The areas were at first considered to be the result of a carcinoma of the cervix, the picture being so strikingly like that seen in carcinoma of the cervix. But sections of the cervix show only such changes as are normally seen in patients of this age. The mucosa of the fundal portion of the uterus is also of senile type.

Left tube.—Obliterated and represented only by a fibrous cord. Left ovary contains several corpora fibrosa, its stroma is dense and firm, its bloodvessels thickened and sclerotic.

NEPHROCOLOPEXY,

WITH REPORT OF CASES.¹

BY

HOWARD W. LONGYEAR, M.D.,

Detroit, Mich.

(With three illustrations.)

AT our two last annual meetings I presented to you some ideas regarding the etiology of nephroptosis and an operation devised according to the theory described. Since the last meeting I have kept on with the work, which has been along the same lines as those laid out in regard to the operation. This article is solely to report progress in the work.

My idea in regard to the etiology is simply that the kidney is pulled down by the nephrocolic ligament, which is a connection between the colon and kidney formed by the framework of the fatty capsule passing down from the kidney and being implanted in the posterior wall of the bowel between the peritoneal reflections. The traction exerted on the kidney by a heavy cecum and ascending colon, by means of this attachment, I believe to be the principal cause of nephroptosis, and that this theory explains satisfactorily the reason for there being fifteen nephroptoses of the right side to one of the left.

Now, in my operation, I simply catch up this mass of longitudinal fibers, which I call the nephrocolic ligament, and fasten it to Gerota's capsule, thus slinging up at once both bowel and kidney. The ligament is simply a lot of fine fasciculi lying in apposition, more or less, according to the amount of fat which is within its meshes. If there is no fat it can be found and demonstrated without difficulty. I bunch this up with a hook, separate it from the peritoneum somewhat, thus forming a loop, and sew Gerota's capsule, overlapped, through the loop. This operation slings up both kidney and bowel, but I believe the bowel fixation to be the most important feature of the operation, as it prevents

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

farther traction on the kidney. Recognizing the fact that the enteroptosis, to a greater or less extent, has to be considered in the therapeusis of these cases, and that any operation which has

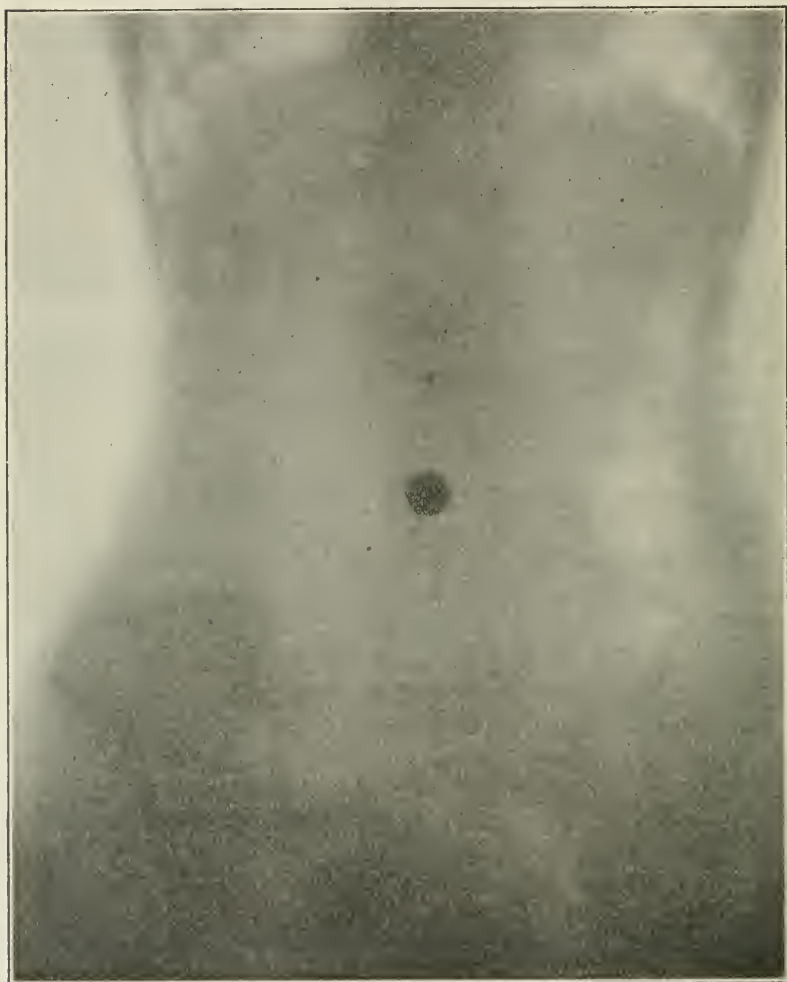


Fig. 1. Case 14.—Colon in pelvis.

yet been perfected can only deal with a comparatively small part of the large intestine, I apply an abdominal supporter to these patients, after operation, which is to be worn indefinitely. Nephrocolopexy will raise the ascending colon and cecum, and so

straighten out an acute angle in the hepatic flexure, but it will not raise the displaced transverse colon; the abdominal supporter must do this, and later an accumulation of fat will very materially



Fig 2, Case 14.—Showing slightly higher position of colon after operation.

assist in the complete cure. Colonic catarrh, which frequently attends these cases, may demand post-operative attention. The surgeon and the gastroenterologist should handle these conditions together.

A full cecum pulling down constantly upon the fatty capsule pulls the kidney out of its position. If we can prevent that traction, then we can relieve the patient of the symptoms of floating

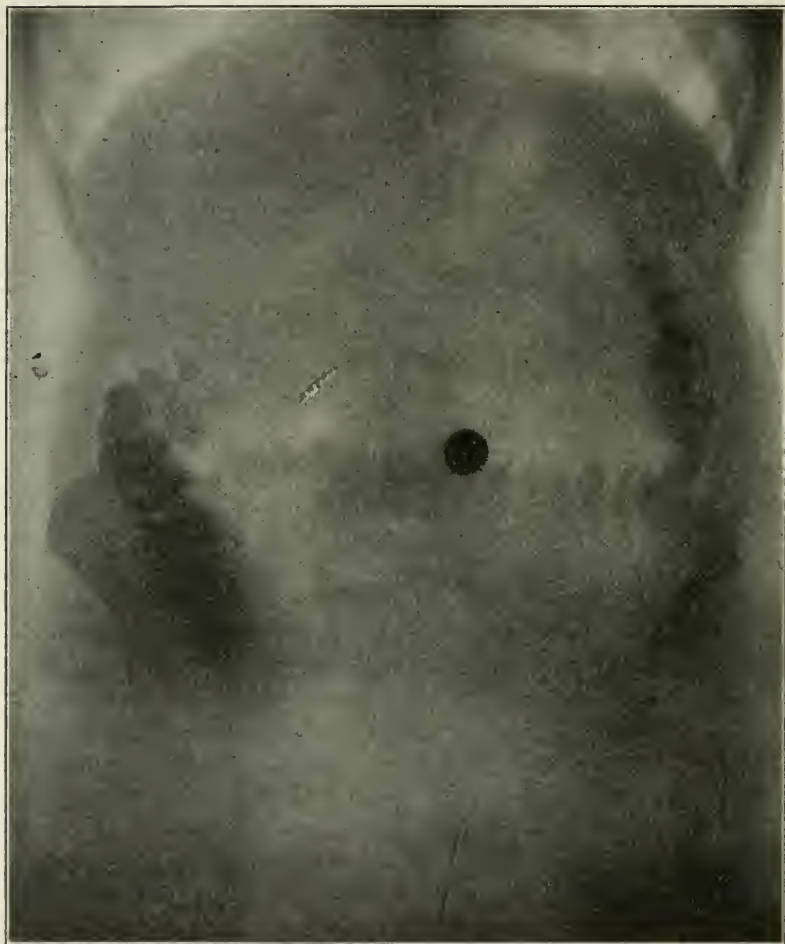


Fig. 3.—View from back, showing angulation of colon.

kidney. The kidney itself, weighing but a few ounces, will almost take care of itself if we once take away that traction. By sewing up this nephrocolic ligament, we prevent also the traction farther above, upon the duodenum, where it is adherent to the fatty

capsule, which we do not do when we sew up the kidney by the old methods, without also fixing the fatty capsule, because the bowel will still pull downward, and through the fatty capsule displace the duodenum, and the patient will continue to have dyspeptic symptoms and nervous manifestations.

I started some Roentgen-ray work recently, with the assistance of Dr. P. M. Hickey of this city, examining cases of nephroptosis for the purpose of determining in them the position of the colon. These patients were given an ounce of subnitrate of bismuth in a pint of milk the evening before, which they took in three separate doses, an hour apart, beginning at about seven in the evening, and had the x -ray made between nine and ten o'clock the next morning. While I have only begun this line of investigation, some of the skiagraphs which I show you are very interesting and suggestive illustrations tending toward the proof of the theory that the displaced bowel is the principal factor in the pathology, and that if we are to treat these patients with success we must first recognize the fact that the condition is a complex one, involving in its pathology not only a displaced kidney, but also the cecum, and in many cases the entire large intestine as well, to a greater or less extent.

Here is one taken of my fourteenth case, which is of especial interest, as the x -ray diagnosis was positive, and was proven later by abdominal section. You will see the shadow formed by the subnitrate of bismuth on the right side, which can be followed down into the pelvis. The bismuth shows the cecum far down in the pelvic cavity. After I had fixed the nephrocolic ligament in this case, in the manner I have described, I opened the abdomen, for the reason that she had had pain in the region of the right ovary and appendix—although I could find no deformity—and found the appendix firmly adherent to the parietal peritoneum, close to the internal ring, and that the fixing of the nephrocolic ligament had pulled the bowel up and put the appendix on the stretch, which was liberated and removed. The patient, a delicate woman, has gained five pounds and is much improved every way. Her constipation has disappeared. Another x -ray will be made soon and a comparison made. (No. 2 was made of this case since the above was written, and shows the cecum to be in a much higher position than previous to operation.)

We have found the best negatives were made with the patient on the abdomen and the sensitive plate beneath. The kidneys

show very little in any of these cases. I have tried giving them methylene blue to bring them out, but with only negative results.

In one case in which we made an *x*-ray the bowel showed very clearly, by reason of gas, with which it was distended, so we inflated the bowel in several cases, but that method was not a success, so we had to go back to bismuth again.

Here is a beautiful illustration (No. 3) of a woman who had a right nephroptosis. The illustration shows a kink or a very decided angulation of the transverse with the descending colon, where the transverse and descending colons lie in apposition to each other for quite a distance. You can see how beautifully it shows the bismuth throughout the whole intestine. No operation has yet been made on this subject, and, owing to the principal deformity showing on the left side I shall expect only partial relief of symptoms from the nephrocolopecty.

I have had trouble after operation, only of a trivial character, and in but two cases. Have operated on fourteen cases since our meeting last year, making a total of twenty-three by this method. Patients have very little pain after operation; they have some pain for the first twenty-four hours, and for a month or two they will complain of some pulling at the seat of operation, but beyond that there is very little trouble of any kind. One patient, the one who had had a hysterectomy performed previously, as well as one breast removed by some other surgeon, did well until the seventh day, when she developed a phlebitis of the left leg, which kept her in bed for three weeks. But she made a perfect recovery, with absolutely no indications of sepsis in the wound. Healing of the wound was by first intention, and the result was perfect four months after she left the hospital.

The other case was exceedingly interesting. The woman did well until the ninth day, when she began to have a pain located in the region of the gall-bladder. But, on examining the wound, which I had dressed a few days before, and found to be apparently well healed with nothing abnormal, it was bulging and painful, but with no inflammatory condition. I passed a probe through the cicatrix, and out spurted a perfectly clear, thin fluid. I thought probably it was a collection of serum, opened the wound a little more, and was surprised to find a large amount of fluid. I put in a small drainage tube, sealed it up with a lot of gauze, thinking it would be well evacuated by the next day. During the night it saturated the gauze and much of the

bedding. It had no odor. By connecting the drainage tube with a bottle it was found that she was passing from two to three pints a day. The fluid was sent to the laboratory and found to contain two-tenths of one per cent. urea. There was absolutely nothing else in the fluid, but the amount of urine voided by the bladder diminished in quantity in proportion as this fluid increased. The urine was normal otherwise, and had been at the time of, and since the operation. There had been no blood in it, and there was no hemorrhage at the seat of operation. The fluid was perfectly clear. During the time the flow continued there was no stain, no urinous odor, or anything of the kind, but it saturated large quantities of dressings daily. She had a special nurse to take care of her, and apparently no sepsis occurred after it was opened. This discharge continued for four weeks, and at the end of that time, as it had become very slight and the wound nearly closed, I let her go home. She sent for me a week afterwards, when I found the region of the wound bulging, opened it as before, and there was perhaps an ounce of fluid discharged. I sealed it up again, after which it healed permanently. I have seen her several times since, and no further trouble has ensued. It seems to me that it could hardly have been the ureter that had leaked; if it were we would have had normal urine in the discharge. Probably it might have been from the cortical substance of the kidney, which may have been cystic and become wounded.

In two-thirds of the cases operated on I found other conditions, necessitating additional operations, which fact renders statistical deductions of doubtful value as far as symptoms are concerned.

This much I can say in regard to holding up the kidney; it does not hold it up rigidly, as is intended in the old operation of uniting the kidney to the muscle, but it holds it so that it is partially movable, which I consider advantageous. In the normal kidney there is motion during respiration, and I think there should be. In my cases, after operation, I can usually feel the lower pole, or the lower half of the kidney, on deep inspiration. One symptom has been markedly ameliorated in most cases, and that is constipation. Patients who had all manner of trouble in opening their bowels and keeping them open, have reported to me that they have not been obliged since the operation to use cathartics; that their bowels have become regular. This, I believe, is a valuable

indication that the consideration of the position of the bowel as an etiologic factor is of primary importance in this condition.

I have thus far operated on a total of twenty-three cases, eight of which had a nephrocolopexy only, while fifteen had additional operations at the same time. Marked general improvement is reported in nineteen, slight improvement in two, and no improvement in two.

271 WOODWARD AVENUE.

LARGE ECHINOCOCCUS CYST OF THE LIVER; OPERATION AND RECOVERY.¹

BY

HERMAN E. HAYD, M.D., M.R.C.S. Eng.,

Buffalo, N. Y.

THE tenia echinococcus is a variety of tapeworm found in the dog, and occasionally in the wolf and jackal, but very rarely in our native North American animal; in fact, only one authentic case is reported, and that by Curtice of Washington, D. C. Numerous other observers, such as Osler and Clement, Sommer, Stiles, and Hassall of the Bureau of the animal industry, have made many dissections of many different varieties of dogs, and have never once found it. It is a tiny cestode four or five millimeters in length, and consists of only three or four segments, of which the terminal one alone is mature. The head is small, and provided with four sucking disks, a rostellum, and a double row of hooklets. The ripe segment contains about 5,000 eggs. It inhabits the upper intestines, and is seen as a little, white, thread-like body, closely adherent among the villi.

To the abdominal surgeon it is of especial interest, since it produces in man in its larval stage a disease which is termed hydatids, and which is developed in various organs of the body, especially the liver, where it occurred in 73.7 per cent. of the recorded cases. It also attacks the lungs, pleura, kidneys, the muscles and dermis, the brain, the female genitalia, and the bones and eyes. In this country the disease is exceedingly rare, and when found it is usually in the foreign-born individual, but in Iceland, where dogs are used freely, and are in such intimate and constant association with the human being, the disease is so

¹Read at the twentieth annual meeting of the American Association of Obstetricians and Gynecologists, held at Detroit, September 17-19, 1907.

common that it is referred to as the "Liver Plague," and one in every seven or ten deaths is due to it.

In Australia it is also very common, and in certain parts of Germany, and in Winnipeg, in the Icelandic population, quite a number of cases have been found, but only one case is reported in a Canadian-born offspring. The eggs are voided in large numbers by the dog, and are deposited in water or on the various vegetables we use as food, or they may be conveyed from the body of the dog by hands to mouth. The egg is swallowed and gets into the stomach or intestines, and there its surrounding wall is digested or dissolved off, the embryo is freed and bores its way through the mucosa into a bloodvessel, and is carried to various parts of the body. Wherever it makes a connection an inflammatory exudate is thrown out which surrounds the cell, and subsequently becomes its protecting envelope or capsule. Inside of this capsule the parasite continues to grow; it consists of two layers, an outer lamellated structure called the cuticula, and an inner granulocellular—the parenchyma; from this inner layer the secondary or daughter cysts develop, and from them tertiary or granddaughter cysts, by a process of evagination; and on the inner surface of the cysts, whether primary, secondary, or tertiary, the heads or scolices of the immature worm are formed.

The disease is most common between the age of twenty-four and thirty, and the symptoms produced depend upon the organs involved, the size of the tumor, and the inconvenience which results from the pressure and contact upon other structures. The parasite produces no specific symptoms of itself, and its presence might not be detected were it not for the irritation, inflammation, and hyperplasia of the organ which shelters it; but the discomfort is often so slight that the disease remains unrecognized, and is only found out at postmortem. Sometimes the cyst grows rapidly, and its capsule is thinned from pressure necrosis and ruptures, the contents of the sac gets into one or more of the body cavities, and may produce very serious inflammatory disturbances, or an abscess forms and points under the skin, and either breaks or is relieved by an operation.

The first case that has ever been under my notice in Buffalo was brought to me by Dr. Tartaro in April, 1907. The patient was an Italian, in good physical condition, aged thirty-seven; married, and a stone mason by occupation. For a number of months he had noticed a hard, painless swelling in the pit of the

stomach, which was gradually getting larger, and was beginning to inconvenience him in his work because of its size. Upon examination, a large globular tumor could be felt, extending deep under the border of the ribs, and particularly to the left side, and filling up practically the whole epigastric and one-half of the inner right hypochondriac region. It was painless, elastic, smooth in outline, and, upon auscultation and palpation, no adventitious sound could be heard and no friction could be felt. The man had never had syphilis or malarial fever, and never was a drinking man. The suggestion to thrust a trocar into the tumor and remove some of its contents for microscopical examination was deprecated, on account of the danger attending this simple and seeming trivial undertaking. Cases have been reported where the patient suddenly died after puncture from a profound toxemia, which resulted from the escape of a few drops of the fluid contents of the sac, and in others a milder form of intoxication took place, associated with fever, malaise, an urticarial rash, and other sequelæ. Moreover, one cannot tell what important structures the trocar would pass through in puncturing the cyst wall, since the tumor, as in this instance, was deep and completely covered by bowels and omentum. It would seem, therefore, much safer to make an exploratory incision, and through it a careful examination, and then proceed with such surgical measures as would be indicated, since nothing short of radical surgery can do any good in this disease.

After studying the case from all standpoints, I was forced to concur in the diagnosis of echinococcus cyst of the liver, which Dr. Tartaro had made at an earlier visit. The patient was sent to the German Deaconess's Hospital, and was operated on April 17, 1907. An incision was made a little to the right of the median line, and after getting into the peritoneal cavity the bowels were seen densely adherent all over, and completely covering a large, white, tense, tumor. They were separated with much difficulty, the skin incision was extended freely, the liver was lifted up as much as possible into the wound, and as it was elevated gauze towels were packed deeply underneath the tumor, and about it and the edges of the wound. Some time was occupied in making the gauze packing so complete that the peritoneal cavity and the edges of the incision would be thoroughly protected when the cyst was opened. A large trocar was thrust into the tumor, but nothing

came out but a little milky-looking fluid. Then the capsule was freely incised, and at least two quarts of cysts, of varying sizes—from a grain of shot to a large walnut—welled out. After the sac was pretty well emptied, it was irrigated with salt solution through a large glass nozzle, with some force, and pushed to the bottom of the cavity, when the mother cyst or that one lining the capsule began to loosen, and was finally washed away. A small piece of iodoform gauze was then loosely packed into the cavity for drainage; the gauze towels were removed, and the sac around the opening was sewed to the abdominal wall and the wound being closed with through-and-through silkworm gut sutures. After the gauze packs had been removed it was seen that the cyst had sprung from the left lobe of the liver and rested high up on the crura of the diaphragm.

The man rallied nicely, and in a few days was in splendid condition. On the fourth day he had some temperature and developed a slight cough, a friction rub could be heard on the right side, and subsequently all the physical signs and symptoms of pneumonia developed. He ran an evening temperature of 104° and 105° ; had considerable cough and bloody expectoration, and became very sick; whereupon Dr. Tartaro gave him the serum treatment, with most satisfactory results. On the eleventh day his temperature was normal; on the fifteenth day the sutures were removed. The wound looked fine, and everywhere it seemed to be perfectly agglutinated. On the seventeenth day he complained of a good deal of pain in the wound, so the dressings were removed, when it was found that the incision had opened and a piece of bowel about four inches long was protruding through the opening. He was taken to the operating room, and, without any anesthetic and without washing the parts, the bowel was gently pushed back; four through-and-through silkworm sutures were passed, and the parts were properly brought together. No complications set in and no pus formed. The sac cavity was occasionally irrigated with salt solution, and he left the hospital in May, 1907; the sinus was still discharging.

I saw him again in July, 1907, when the wound was thoroughly united, and his physical condition was excellent. Perhaps the incomplete union and the subsequent rupture, with bowel protrusion, were due to the delayed and imperfect solidification of the tissues consequent upon the pneumococcus infection, as the sputum revealed the organism in great abundance, and Dr. Tartaro

tells me it is in the unmixed or true infections that the serum, which is an Italian product, is most efficacious. It has been used very largely by him, and some of his cases have been reported in the *Buffalo Medical Journal*, in an article read in March, 1906, by him before the Buffalo Academy of Medicine.

493 DELAWARE AVENUE.

COTARNINE PHTHALATE IN UTERINE HEMORRHAGE.

BY

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Department German Polyclinic, etc., etc., New York.

ALL drugs formerly at our command to control hemorrhages of uterine origin may be divided into two groups, according to their mode of action. The first group, in which are included the gossypium and ergot preparations, act directly upon the muscles of the uterus, causing its contraction. The second group, including hydrastis and adrenalin, affect the circulatory system by contracting the arterioles. Either group can produce severe and undesirable after-effects.

Preparations of ergot vary in composition, and therefore in their therapeutic results, and may bring on acute ergotism with its train of symptoms. They are, however, of great value in contracting the uterus after labor and during the puerperium, but cannot be used during pregnancy or in dysmenorrhea because of their incompatible physiological action.

Hydrastis can be used where ergot is contraindicated, as it does not cause uterine contractions. It has been employed for many years in the treatment of dysmenorrhea, but, because of the effect upon the vasomotor system, with the corresponding high arterial tension, it produces a slow pulse and rapid breathing. It has a disagreeable taste, and causes digestive disturbances upon continued use.

Adrenalin need not be considered, as it is seldom used for uterine hemorrhages, and then only locally, as in carcinoma.

Because of the shortcoming of these drugs, it was desirable to find a substance which would be proof against criticism. This

has been accomplished by introducing into therapeutics the neutral phthalic acid salt of cotarnine of the formula $(C_{12}H_{14}NO_3)_2C_8H_6O_4$. Wohler¹ found cotarnine many years ago by oxidizing the opium alkaloid narcotine with manganese dioxide and sulphuric acid. It was, however, not used medicinally until ten years ago, when its chemical relation with hydrastinin was observed.

Cotarnine phthalate (styptol) is a yellow crystalline powder, readily soluble in water, composed of about 75 per cent. cotarnine and 25 per cent. of phthalic acid, both of which have hemostatic properties. Its physiological action has been investigated and brought to the attention of the medical profession by Vieth, Mohr,² Abel,³ (Berlin), and Chiappe & Ravano⁴ of Bossi's Clinic at the University of Genoa. Authors are unanimous in their opinion that, in addition to its power as a styptic, it has decided sedative qualities due to the presence of cotarnine. (Vieth, Abel, Jacoby,⁵ Lockyer⁶.) Stomach and nose bleedings are not readily influenced by it, whereas bladder and uterine hemorrhages are immediately controlled by local application. The whole circulatory system is not affected, but its influence is mainly shown throughout the distribution of the hypogastric artery. It produces no contraction of the uterine muscles, and therefore can be used during pregnancy, and especially in dysmenorrhea. The sedative action of styptol causes a slight degree of drowsiness, but, again, it shows a marked influence upon the uterine nerves lessening their irritability, as has been proven by the experiments of Mohr. Toxic manifestations can only be produced by very large doses. The lethal dose is about gm. 0.5 to one kilogram weight of animal. Thus we have in cotarnine phthalate a hemostatic which selects the urogenital system as its sphere of action without influencing the rest of the organism. Because of the great difference between the therapeutic and toxic dose, it can be used with good results where ergot and ergotin have failed, by simply increasing the ordinary dose (Toff⁷). Abel claims in his record of three hundred cases that it by far excels all other hemostatics. Von Elisher has obtained good results by giving cotarnine phthalate before menstruation, in menorrhagia and metrorrhagia. As may be seen from numerous publications of clinical tests, it can be used with great success in the following conditions: Profuse menstruation in virgins and nullipara not due to any gross pathological or anatomical cause. Dysmenorrhea. In

bleeding during the menopause. In hemorrhage during pregnancy. In hemorrhages from fibroma and myoma of uterus. In bleeding caused by diseased adnexa or pelvic cellulitis.

The favorable indorsement which the drug had received from physicians of such high standing as Abel, Bossi, etc., induced me to introduce it in my practice. So far I have used it in some twenty cases of dysmenorrhea where no mechanical cause could be found. I prescribe the drug in the form of sugar-coated tablets of $\frac{3}{4}$ -grain each, one every three hours, three days before the expected period, and instruct my patients to continue this dose during the entire menstrual period. The results have been uniformly successful, and prove the experience of other authors. In my opinion cotarnine phthalate is one of the best achievements of modern chemistry, and worthy of recommendation. Its action as a uterine hemostatic and sedative is most pronounced.

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- 212 EAST EIGHTEENTH STREET.

HYDRAMNION; ACRANIA WITH SPINA BIFIDA.

CASE REPORT.

BY

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(With two illustrations.)

MARY McK., age 38 years, American by birth, housewife by occupation, married twelve years, para-IV. Menstruation began at the age of eighteen years; after its establishment the cycle was

regular every twenty-eight to thirty days, and lasted from three to five days. The family history is negative as relative to any child-bearing peculiarity or unusual gynecologic disease.

The last menstrual period began on December 9, 1906, from which time the usual conditions of a normally advancing pregnancy appeared. At the beginning of the sixth month she con-



Fig. 1.—Acrania and Spina Bifida.

sulted me because of the unusual enlargement of the abdomen. From inspection one would have judged her to have been about full term. Examination showed nothing abnormal excepting an excessive amount of liquor amnii.

On July 27, 1907, about midnight, her labor began, the duration of her pregnancy at this time being between seven and eight months. I was called at 7:30 A.M., and found the woman in the

second stage of labor, with the fetus presenting by the breech. I ruptured the membranes, causing all the liquor amnii to be caught in a large dish pan placed upon the floor by the side of the bed. The actual amount of liquor amnii, when measured, was 4 quarts, $1\frac{3}{4}$ pints. The child, a female, was alive at the time of my first examination, but was dead when born. Its weight was 3 pounds.



Fig. 2.—Acrania and spina bifida.

As is usual when there is a high degree of hydramnion, it showed serious defects in development. The bones of the face were peculiarly distorted, otherwise their anatomical structure was normal. The parietal bones were absent. The vertical portion of the frontal bone ended at the superciliary ridge; the horizontal

portion was present. The temporal bone was wanting in its squamous portion; the mastoid and petrous portions were present. The occipital bone was absent. There was a small, rudimentary piece of bone, corresponding to its basilar portion, with which the atlas articulated, interposed between the body of the sphenoid and petrous portion of the temporal. The sphenoid and ethmoid bones were present and normally developed.

The vertebræ were normal in number. The anterior solid segment, or body, of each individual vertebra was normal. The posterior segment consisted of a pedicle and transverse process only; the lamina and spinous processes were absent.

There was neither bony arch, spinal canal, brain, or spinal cord. There was no cranial cavity. A thin tissue membrane extended from the posterior free edge of the frontal bone downward and backward to the shoulders, ending in a free edge, and simply resting upon the exposed bony surfaces, after the manner of a curtain.

The integument was present over the entire body, except as shown in the second photograph. The skin is seen to divide over the sacrum and to pass upward on either side of the exposed spinal canal, its free edges being attached over the superficial groups of muscles and posterior extremities of the ribs, external to their fixation articulation to the vertebræ, to be continuous with the skin over the side of the neck, face, and forehead. The long muscles of the back were absent. The posterior surfaces of the bodies of the vertebræ, their pedicles, and transverse processes were exposed to view. The spinal column bulged outward beyond the skin surface.

307 YORK STREET.

A CASE OF PUERPERAL ECLAMPSIA.

BY

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Brooklyn, N. Y.

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WHILE there is such a variance of opinion and such a diversity of theories as to the etiology and treatment of convulsions during the puerperium, a detailed report of each case of eclampsia ought

to considerably increase our knowledge of the same. For this reason, I take pleasure in reporting the following case: Mrs. L., age twenty-seven, has a sister who is subject to violent epileptic attacks; otherwise her family history is negative. She is well nourished and in good health. Primigravida. Date of expected confinement, October 5, 1907. Repeated urinary examinations showed an average specific gravity of 1.017. No albumin. The daily excretion of urea averaged 450 grains. The abdomen was very large and tense, so that I suspected twin pregnancy without being able to demonstrate it. During the eighth month the patient complained of some backache, but otherwise felt well. There was some edema of the lower extremities. On September 17 the patient sent for me, and I found considerable edema of the legs as high as the knees. Administered a diuretic and the edema diminished to a marked degree. There was some enlargement of the thyroid gland. The patient was still feeling well. Two days later, at 3 A.M., I was again sent for. She was having rhythmical bearing-down pains at twenty-minute intervals. On examination, the cervix was found dilated to admit three fingers, membranes were ruptured, and head presenting. Pains continued all day, dilatation increasing. At 6 P.M. I was again hurriedly sent for, as the patient had had a convulsive attack. Found the cervix completely dilated, head engaged. Decided on immediate delivery, as patient was weakening, and pains had little force.

While waiting for an anesthetist, she had a second convulsion. It began with spasm of the left hand; the head was drawn to the left side, eyes twitching, face greatly distorted. The right arm and legs were next involved. Respiratory muscles became rigid and patient became cyanotic. This was followed by coma with heavy, stertorous breathing. In a half hour she awoke, was chloroformed and forceps applied. First child delivered at 9:40 P.M. On examination I found a second head presenting. Forceps were again applied and a second child delivered. Placenta was delivered forty-five minutes later by the Credé method and three sutures taken in perineum. A half-hour later, when she had recovered from the anesthesia, the patient had a third convulsion, followed by nineteen more before morning. Chloroform was used, hot pack given, and chloral hydrate $\bar{5}$ ss in one pint hot saline was administered per rectum. The convulsions continued during the morning. (*Veratrum viride* was not used.)

Called in consultation Dr. Sewall Matheson. We decided on

eclampsia as the condition, the kidneys as the cause; administered magnesium sulphate $\bar{3}$ ii, in dram doses, per os, q $\frac{1}{2}$ h, with one quart saline per rectum, high, q 3 h, and chloral hydrate $\bar{5}$ ss once more. Patient did not have any more convulsions, voided large amounts of urine involuntarily, and had repeated bowel evacuations. Edema of hands and face gradually subsided. *Urine*—Sp. gr. 1,010, albumin abundant, urea grs. iv to $\bar{3}$ i, some hyaline casts.

On the third day patient complained of headache and "seeing things" when she slept. Temperature 100° , pulse 80, and not so tense as before. Kemp irrigation given, using six quarts water at 110° F., also 10 grains each of sodium potassium and ammonium bromide. The twins, girls, weighed seven pounds each, were not asphyxiated, and did nicely on modified milk until the fifth day, when they were put to the breast. Mother made an uneventful recovery. Urinalysis on eighth day: Sp. gr., 1,017, albumin moderate amount, urea grs. ix to $\bar{3}$ i, no casts.

A TELEPHONIC CURET.

BY

ARTHUR C. JACOBSON, M.D.,

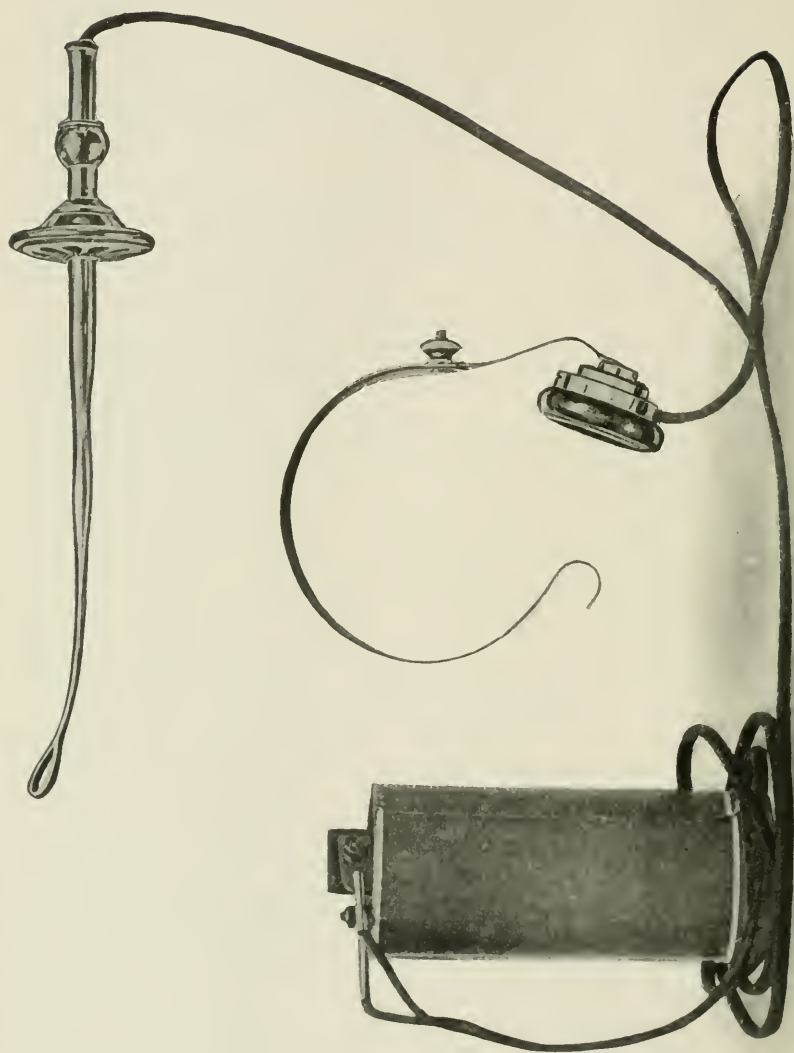
Brooklyn, N. Y.

(With one illustration.)

IN the *Annals of Surgery* for September, 1907, the writer described a telephonic searcher for use in the bladder. Since devising the searcher it has occurred to him that the principle can be utilized in another and much more useful way, and he has accordingly applied it to the curet.

In curetting, as it is now practiced, one must depend almost entirely upon the sense of touch. Of course, one uses one's eyes, too, to guide the instrument. Now, the employment of still another sense, hearing, cannot help but aid the operator to curet thoroughly and safely. When using the telephonic curet one can hear, as well as feel, what he is doing, and, needless to say, the sense of hearing is more trustworthy than the sense of touch.

The instrument is exceedingly sensitive and transmits micro-



Jacobson's Telephonic Curet.

phonic sounds perfectly. Whether one is scraping polypoid or fungoid material or "hard pan" admits of no doubt.

With such an aid we should be able to curet a little better than the late Horace Tracy Hanks once showed that we do now, when he curetted a large number of uteri at the Woman's Hospital prior to hysterectomies, afterward bisected them, and found that he had failed to touch much of the endometrium. He was conceded to be an expert, and in these experiments he curetted as carefully and thoroughly as he knew how.

It would seem to the writer that the risk of perforation should be minimized. Guided by three senses, the curet should be as "intelligent" as a curet well could be.

The small house telephone receiver and transmitter of the Schmidt-Wilckes Electric Co. of New York City are shown in the illustration, one dry cell operating the apparatus, and the curet is seen to be attached to the front of the transmitter through the medium of a plug joint.

115 JOHNSON STREET.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of October 8, 1907.

The President, BROOKS H. WELLS, M. D., in the Chair.

The following specimens and cases were reported:

DR. HERMAN J. BOLDT.

HYDROSALPINX SIMULATING TUBAL GESTATION.

The specimen was procured this morning from a woman who had been regular during her menstrual life until two weeks ago. She then menstruated a few days sooner than her regular time, and the blood was darker than formerly and of smeary consistence. After having this atypical loss of blood for a couple of days she was seized with a violent attack of cramp-like pain in the lower abdomen, most intense in the right side. On examination a soft swelling was found behind the uterus, more to the right of the median line. This was diagnosed to be a tubal enlargement. On the left side there was also some tubal distension but not so marked, giving the impression of an interstitial salpingitis. The uterus was slightly increased in size, a little softer in consistence than normal, and its vaginal portion sensitive to touch. There was a continuance of atypical bleeding with occasional at-

tacks of cramp-like pain. The diagnosis of probable tubal abortion was made. On operation a diffuse pelvi-peritonitis was found to be present, with extensive, but easily separable adhesions. The cause of the cramp-like pain was found to be due to a single twist of the right hydrosalpinx. The tube, with its interstitial part, was excised from the cornu of the uterus, and the ovary implanted into the space from which the interstitial part of the tube had been removed.

The left Fallopian tube was not so much distended, but its fimbriated extremity was entirely obliterated; it was widely opened, the contents evacuated, and the edges everted and the opening thus made seamed over with catgut so as to have the tube at its abdominal extremity remain permanently patent. It had been ascertained that the calibre of the tube was pervious to the uterine cavity.

The second specimen, one of tubal rupture, operated a few days ago, shows particularly well the point emphasized on former occasions when speaking on the diagnosis of tubal gestation, the impossibility of diagnosing between some instances of tubal abortion, and of tubal rupture. In this instance, as may be seen in the specimen, the rupture is such that the blood oozed from it as slow as it would ooze in cases of abortion; and before opening the abdomen, a tubal abortion had been diagnosed by me. A physician had curetted the woman for the purpose of causing a criminal abortion, and the traumatism probably caused the rupture.

There is another point that I should like to mention—the differentiation between ruptured tubal gestation and tubal abortion. The main sign which aids us in making a differentiation is the rapidity with which the blood pours forth and the quantity of blood in these cases. In other words, a sudden and complete collapse enables us to assume the condition to be rather a tubal rupture than a tubal abortion. Yesterday morning I operated on two ectopic cases. In one the ectopic condition was accompanied with intense collapse. This patient was brought to the table with a pulse of 130, being hardly perceptible, and with an intense degree of anemia and collapse. A rapid laparotomy was done. The tube was brought out and proven to be one of tubal abortion. In other words, here was a case of the abdomen being filled with blood, so that it spurted out and still the tube itself showed no evidence of rupture. At the fimbriated end of the tube decidua protruded. The specimen is now in the process of hardening.

The second case illustrates the difficulties encountered in diagnosis. This case was sent to the operating room for the repair of a lacerated perineum and cervix. Intraperitoneal conditions were discovered and it was decided to operate through the vagina when it was learned that a tubal gestation existed. In this second case there was but slight bleeding in the peritoneal cavity.

DR. ABRAM BROTHERS.—I think the specimens present two features of interest. One is the candid confession made of an

error in diagnosis. I have heard at medical meetings, but not at this Society, the statement made that an ectopic can always be diagnosed by the aid of certain subjective symptoms and objective signs. I have always admired those gentlemen who could do it. My personal experience in cases of ectopic gestation is that, in the majority of the cases, a diagnosis can be made. But the man who can go through his operative life without errors is one of a class to which I do not belong. The case the doctor presented of hydrosalpinx with a twisted pedicle, causing an error in diagnosis before operation, is similar to one of my experiences many years ago; in that case all the subjective and objective signs were those of ectopic gestation. Briefly, the woman had suppression of menstruation. There were irregular bleedings, with a certain amount of anemia, and violent pains on one side. Further exploration revealed a mass to one side of the uterus. The diagnosis of ectopic gestation was made. The condition was found to be similar to the case reported by Dr. Boldt, that is, a hydrosalpinx pressing to one side of the uterus. After the removal of the tumor and closing the abdomen, I proceeded to place the patient in the lithotomy position and did a curettage for the removal of the debris of an early abortion. In other words, here was a normal pregnancy with abortion complicating a hydrosalpinx, and presenting subjective and objective symptoms which could not be differentiated from an ectopic gestation.

DR. GEORGE H. MALLETT.

A CASE OF INTESTINAL OBSTRUCTION FOLLOWING LAPAROTOMY
RELIEVED BY RESECTION OF A PORTION OF THE ILEUM.

Mrs. M. W., aged 31, was admitted to the hospital (August 18, 1907) with the following history: She had had an abdominal operation performed two years previous, presumably for a double pyosalpinx. She had never menstruated since. Her health had been good since operation with the exception of occasional pain in right iliac region and constipation until two days before admission to the hospital. Two hours after having eaten a green apple she began to complain of intense pain, of a crampy character, in the lower part of the abdomen. This was accompanied by vomiting. She was then given strong purgatives and enemas in an effort to move the bowels—castor oil, calomel, jalap powders, croton oil and soapsuds enemas were administered without avail. The vomiting became more frequent and large quantities of very sour and yellow fluid were ejected. Upon admission her temperature was 101°, pulse 120 and weak, respiration 32. Vomiting was now continuous and the ejection consisted of large quantities of greenish fluid and fecal matter of a most offensive odor.

An incision was made through the right rectus muscle and the abdominal cavity was found full of a dark colored fluid, thin and serous in character. The lower part of the abdomen was full of

coils of distended intestine, and one large loop more distended than the others was absolutely black in color. This was found to be imprisoned by a strong band of adhesion between the stump and raw surface on the right side and the peritoneum of the posterior right side of the pelvis.

The band of adhesion was divided and the gangrenous loop of intestine was brought out of the incision and resected and an end-to-end anastomosis made with a Murphy button. The resected portion of the intestine measured 18 inches and was of the lower part of the ileum beginning six inches above the cecum—the appendix was adherent, enlarged and seemed to be subacutely inflamed. This was also removed. The pulse became rapid and weak during the operation but recovered with the administration of a copious intravenous infusion. After the third day the convalescence was uneventful and uninterrupted. The button was passed on the fifteenth day.

The frequency of post-operative symptoms attributable to adhesions is sufficient to impress upon all abdominal surgeons the desirability of using every means and care to avoid this condition. The chief protection is not to leave any raw surface in the abdomen after operation. This is of far greater importance than the application of powders such as aristol to these surfaces or the flooding of the abdominal cavity with the saline and adrenalin solutions as have been recommended.

DR. BROOKS H. WELLS presented the histories of three interesting cases of abortion.

ABORTION FROM INTRODUCTION OF HAIRPIN INTO UTERUS.

CASE I.—L. McN., aged 20, single, a strong, healthy girl, was referred by her physician to my service at the New York Polyclinic. Had borne a child when 18 after a normal labor. Had two abortions, one at 4 months and one at 2½ months, both self-induced. States that she is now pregnant about 2½ months, and that one week ago she introduced a hairpin into her womb. It suddenly slipped from her fingers and disappeared and she thinks it is still in her uterus. Since the introduction of the pin she has had slight abdominal pain at times and has spotted. For three days she has felt sick and miserable and has had chilly sensations.

On admission to the hospital her temperature was 101°F; pulse 78. Examination showed a mucosanguinulent brownish discharge from the vagina. The uterus, lying just forward of the axis of the vagina, was tender, soft and enlarged to the size of a two and a half months pregnancy. There was a slight, old laceration of the cervix. With the patient under an anesthetic, the pin could be felt by a sound lying apparently diagonally across the fundus. An attempt to remove it by forceps failed as it was not thought wise to use much force because of the danger of perforation of the fundus by the sharp ends of the pin. The cervix could not well

be dilated enough to admit the finger. A transverse incision an inch long was made in front of the cervix, the bladder pushed back and the cervix incised in the middle line to the interval as, the pin extracted, the remains of the ovum and decidua removed

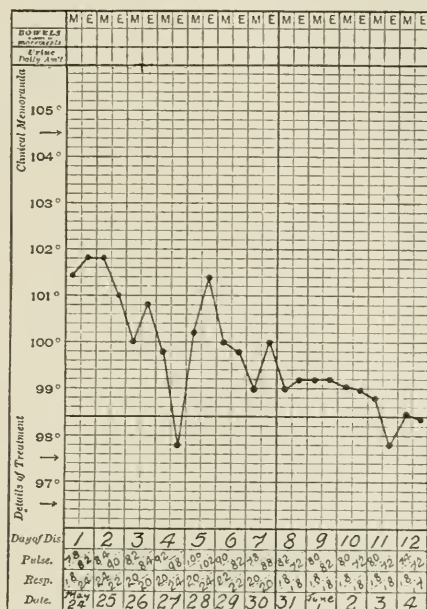


Fig. 1.—McN.

and the wound in the cervix and vagina closed by No. 2 10-day chromic catgut sutures. A thin strip of iodoform gauze was left between bladder and cervix for 48 hours. Recovery was uneventful. The accompanying chart shows the temperature curve.

SAPREMIA FOLLOWING ATTEMPTED ABORTION.

CASE II.—Mrs. S. E., aged 23, married five months, had had some instrument passed into her uterus ten days before her admission to hospital.

At 8 P. M., April 14, when I first saw her, she was flushed, stuporous, with a mouth temperature of 105° and pulse of 122. Palpation of the abdomen showed a uterus enlarged to the size of a five months' pregnancy. There was no tenderness. The external genitals were wet with an extremely offensive putrid smelling discharge from the vagina. No vaginal examination was made. Preparations were at once made to empty the uterus and the patient was anesthetized. The vagina was cleaned. The cervix was soft and was stretched with a steel dilator until it

would admit a finger. The macerated and putrid secundines were removed piecemeal by ringed dressing forceps. The whole interior of the uterus was then gone over gently with a rather dull-edged irrigating curette through which was flowing, first hot normal salt solution and then a weak, hot, watery solution of iodine. A large amount of decidua like material was removed by the curette and under the stimulating influence of the hot iodine the uterus contracted firmly. No gauze was put in the uterus or vagina. The patient was put to bed in good condition. At 10 P. M. her temperature by rectum was 103° F. and pulse 98. At 2 A. M. the temperature was 101° F. Soon after the patient went to sleep. At

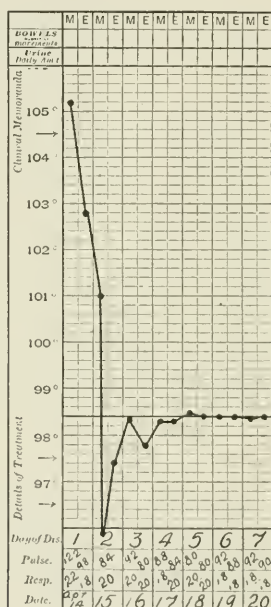


Fig. 2.—E. S.

8 A. M. the temperature by rectum, taken by two thermometers, and again in my presence an hour later, was 95.8° and pulse 84 and soft. The patient did not look badly and still had a flush on her cheeks. She was given hot saline and whiskey by rectum and by mouth, and hot water bottles were placed about her. The temperature rose slowly and at 2 P. M. was 97.4° . At midnight of the third day after the operation it crossed the normal line from below and stayed normal. Convalescence was uneventful.

The case was evidently one of pure sapremia, and is interesting because of the remarkable drop in temperature following the removal of the decomposing contents of the uterus.

EXTREME ANEMIA FOLLOWING ABORTION WITH PERFORATION OF FUNDUS. ABDOMINAL SECTION, RECOVERY.

CASE III.—Mrs. G. S., aged 21, had borne one child, delivered by forceps three years ago. Menstruation was always typically normal. Her last menstruation was, she thinks, about the end of November. She was admitted to my service at the Polyclinic on the evening of March 21, 1907, in a condition of extreme anemia and made the following statement: About February 1, some days after attempts had been made to induce an abortion, she expelled a fetus while riding in a trolley car. The expulsion

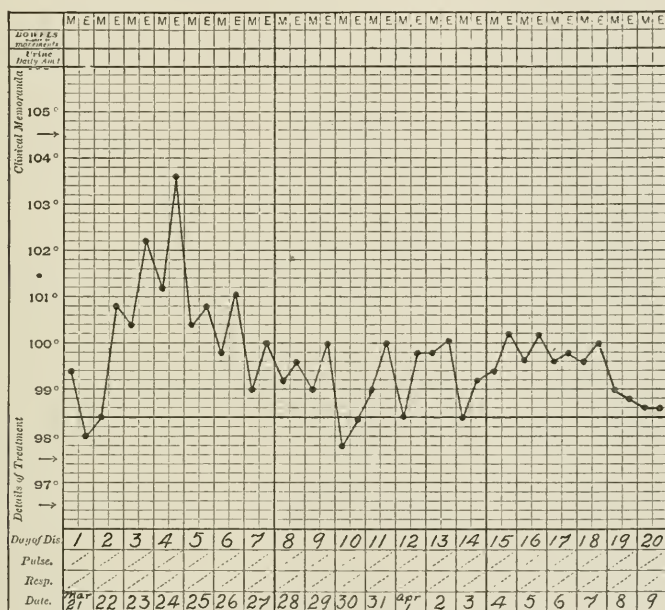


Fig. 3.—G. S.

of the fetus was followed by severe hemorrhage. Ten days later she expelled the afterbirth. She continued to flow and passed large clots from the vagina almost daily. She had been confined to bed for four weeks. Three days before admission a physician curetted her and packed the uterus to stop the hemorrhage. The flowing continued and after the curettage she vomited continually. On admission her temperature by mouth was 99.4°, pulse 138, and small; respiration 22 and labored. The mucous membrane of the mouth, tongue and eyelids showed no trace of pink. Color of face was ashy gray; expression anxious; complained of great thirst and was very restless. Vagina contained clot; cervix was soft and admitted tip of finger.

Patient was anesthetized with oxygen and ether given through the Gwathmey vapor inhaler and improved in condition under the anesthesia. The uterus was $3\frac{1}{2}$ inches deep. It was explored with a dull irrigating curette through which a hot sterile normal salt solution was flowing, and except for a few clots was found to be empty. The fundus was felt to be rough and irregular on the left side, and a hole was found through which the curette passed into the peritoneal cavity. Immediate preparations were made and an abdominal section done. A few old clots and a little free blood was found in the abdomen. A rent $\frac{3}{4}$ of an inch long slightly to the left in the fundus of the uterus was closed by a plain catgut suture. A subperitoneal fibroid the size of a large English walnut on the posterior surface of the fundus was of a dark purple color and apparently necrotic. It was removed. The left ovary was a glandular cyst the size of a small orange; it had the same necrotic appearance and was removed, as its pedicle was thin and easily tied off. The peritoneal cavity was filled with hot salt solution and the abdomen closed with three through-and-through silkworm-gut sutures, the fascia edges being united by a running plain catgut suture.

Patient was put to bed in a very critical condition. On awakening from the anesthetic 1-6 grain morphia was given hypodermically to quiet the extreme restlessness. Hot saline solution was given by rectum oi or oii q. 3 h. After 12 hours water, whiskey and beef juice were given in small amounts frequently by mouth and were retained. Oxygen was given 15 minutes or more out of every hour until noon of the 24th, and I believe was the means of keeping the patient alive. It relieved the air hunger, quieted the restlessness and made both pulse and respiration slower. Strychnia 1-3 grain was given every four hours for several days and seemed to have a good effect in slowing the pulse and making the respirations deeper.

Fortunately there was no evidence of sepsis; the abdomen remained flat, the bowels moved as the result of the saline enemata and involuntarily from the first day to the end of the first week. The stomach retained whatever was put in it. The elevation of temperature shown in the chart and the rapid pulse seem rather the result of the extreme anemia than any septic condition. An examination of the blood made by Dr. Jeffries, director of the pathological laboratory at the Polyclinic, showed less than 20 per cent. of hemoglobin, something over a million red corpuscles, numerous erythroblasts and no leucocytosis.

Two weeks after the operation the patient was allowed to sit up out of bed and fainted. The next day she sat up again without bad results, and on May 9 insisted on going home. On June 1 she was reported to me as being in good condition and rapidly regaining her strength and color.

I consider it remarkable that a patient in such extreme anemia should have recovered.

DR. EDWIN B. CRAGIN.—I should like to ask Dr. Wells the reason for the gangrenous condition of the fibroid.

DR. HERMAN J. BOLDT.—I should like to ask Dr. Wells if this gangrenous condition could not have resulted from the extreme loss of blood?

DR. BROOKS H. WELLS.—Yes. The history was that she had had an abortion attempted, and had been flowing for weeks. She finally expelled a fetus, and this was accompanied with severe hemorrhage. She continued to flow seriously for four weeks. She was curetted, but continued to flow and was sent to the hospital.

DR. BRETTAUER reported a case of

ABSENCE OF VAGINA, UTERUS AND LEFT KIDNEY.

The patient came under my observation in March, 1905, with the following history: R. L., age 23 years, married almost two years, is one of five children of healthy parents; has never had any menstrual flow, but since her seventeenth year has had profuse nosebleed regularly every three weeks, lasting from five to ten minutes, accompanied by severe headache. Attempts at coition have always been rather painful; never followed by orgasm. The patient's general condition is very good. Breasts well developed; physical examination of organs of chest and abdomen shows normal conditions; in the lower part of the rather adipose abdomen, however, right above the symphysis, a slight resistance can be indistinctly felt. Examination of the external genital organs shows pubes thickly covered with hair, normal labia and clitoris; urethral opening dilated and entered without difficulty by index finger, suggesting its having been dilated during coition; hymen imperforate, can easily be pushed inward for about one and one-half inches. Rectal examination reveals a hard mass of irregular shape filling the right half of the pelvis about two and one-half to three inches above the anus; this mass can be pushed upward and out of the small pelvis without causing the slightest pain. Bidigital examination with one finger in the rectum and one in the bladder easily established the fact that there was no intervening tissue between these two organs hence the entire absence of vagina is demonstrated. Urine shows signs of a slight cystitis.

Having diagnosed the pelvic mass to be an atresic uterus, I made an attempt on March 31 to establish connection with the cervix through an incision made into the intact hymen; it was very quickly demonstrated, however, that this could not be done without injury to either the bladder or rectum, which were constantly bulging into the space made with the finger by blunt dissection. With a view toward establishing a somewhat more voluminous and deeper vagina, the skin about one-half inch from the base of the hymen was circumcised, dissected from its subcutaneous connections and tightly packed to form a canal at least three inches

in length and one inch in width. After several weeks she left the hospital with a blindly-ending sac forming a vagina.

Under the impression that the pelvic mass represented a uterus slightly enlarged by retained menstrual blood (hematometra) and because the patient was desirous of having a menstrual flow, as well as a chance to become pregnant, she was re-admitted to the hospital on June 17. My intention was to make an abdominal incision, open the vesico-uterine peritoneal fold, cut into the cervix transversely until the cavity was found and then establish from above a connection with the sac previously made. Before opening the abdomen, I again incised the walls of the artificial vagina in an attempt to reach the lower pole of the above mentioned mass. During this procedure the posterior wall of the bladder was injured; it was immediately sutured and the wound packed. On opening the abdomen it was at once evident that the mass which had been taken for an enlarged uterus was retro-peritoneally situated; it was the size of a cocoanut and suggested an enlarged kidney.

This fact was established beyond question by the absence of kidneys in both lumbar regions, and the presence of two small ureters starting from the lower pole of the described tumor; after a distance of about one inch, they united to form one ureter whose course was clearly demonstrated by making a small incision in the parietal peritoneum. From each internal abdominal ring a round ligament of normal size was found, forming a distinct peritoneal fold in the median line. On either side, an ovary rather above the normal size was situated in the iliac fossa, just where the round ligaments disappeared in the peritoneal fold; attached to each ovary was a tube, whose fimbriated ends were free and whose uterine ends thinned out gradually and were merged in the peritoneum of the iliac fossa. Only the right tube, however, possessed a lumen.

Cystoscopic examination showed only a right ureteral orifice, out of which the urine spouted very actively; the usual trigonal division of vessels was not found; a rounded bulging occupied the trigonal region, to the right of which the right ureteral orifice was situated. The patient made an uninterrupted recovery.

In connection with this case Dr. Brettauer presented a patient

WITH ABSENCE OF VAGINA AND UTERUS,

in whom an artificial vagina had been established by means of a plastic operation. This patient is 27 years of age, one of seven sisters, of whom six are married and have borne children; there are four brothers, two of whom died in insane asylums, another is an inmate of an asylum at present. The patient was married at the age of 17; she had not yet menstruated. It was immediately discovered that coition was impossible, and a surgeon in Kieff was consulted. He apparently used a large flap of skin

from the labium majus on either side and inverted it; the result was *quo ad functionem*, very good; from that time marital relations were indulged in without any difficulty, and to the satisfaction of husband and wife.

The external genital organs are apparently normal, except that on either side close to the large labium, there is a flat, soft scar; clitoris and labia minora normal; under the external orifice of the urethra there are distinct hymenal remnants. The vagina itself is about three inches long, and easily allows the introduction of two fingers; it is partly lined by mucous membrane and partly by skin covered with hair.

Bi-manual examination per rectum discloses two bodies which in size, shape and location, suggest ovaries; there is nothing which would suggest a uterus. The general condition of this patient is very good, and the reason for her seeking medical advice was a slight cystitis with chronic constipation.

DR. F. R. OASTLER.—I saw an interesting case four years ago in which there was a mass of hair growing into the vaginal orifice from the labia.

DR. SIMON MARX presented a

DÖDERLEIN PUBIOTOMY NEEDLE.

The safety of this instrument lies in its bulkiness and weight. Papers on the

METHODS OF TEACHING GYNECOLOGY*

were read by DRs. WEST, GOFFE, JEWETT, and DICKINSON.

DR. WILLIAM K. POLK.—It strikes me to-night that the gentlemen present understand this subject, "What Are the Best Methods of Teaching Gynecology," as well as I do. Every man here knows as well as I, if not better, how to examine a case. Therefore, I will not say much except in the one line of thought which really carries one back to his school or student days.

The situation, as I find it, is this: The fellows that I have to deal with do not understand their anatomy. Therefore, I go to the professor of anatomy and say, "It is not for me to teach the boys anatomy. It is up to you. If you do not teach anatomy who will? Therefore, give them a good course in anatomy, regional as well as topographical."

When a man comes to me, I say to him, "I have no earthly use for you unless you can picture, anatomically, every single tissue and every single object that lies in the patient's pelvis from the skin to the anterior abdominal wall to the skin of the back." I do not think it is possible to teach students, or undergraduates, or post-graduates anything about the study of gynecology until there has been impressed upon them the importance of having fixed in mind the exact situation, location and circumstances of every

*See original articles pages 754, 758, 771, 778.

single structure, large or small, that lies within the area they are called upon to interpret. Then when they meet with abnormal conditions I say, "You have a man responsible for instructing you in theory as laid down in the various text-books concerning the anatomy, physiology and pathology of the pelvic organs. If he has not succeeded in impressing upon you thoroughly and completely the situation, he has not been equal to the emergency." The situation resolves itself into this. The student must have a conception, an anatomical conception, and with his book, he must learn, line upon line, precept upon precept, everything that pertains particularly to pathology, to anatomy, and to diagnosis. Leave out therapeutics for a time. I lay less stress upon therapeutics than upon diagnosis.

Now then comes another question. These boys have theories in their minds; how are we going to get them to practice them? I confess I do not give them any knowledge based upon examinations without ether, because I find that for a student to examine the average woman without ether is like attempting to teach diagnosis by an examination of the cadaver. The tissues are so distorted that even a man, the most expert of us, finds himself at times at a loss. Therefore, why should we expect any one of these students to form any fixed idea as to the precise conditions with which we are dealing. After all, the thing we wish to teach these men is not simply therapeutics, but diagnosis and especially prognosis, because the basis of a good deal of subsequent comfort in dealing with patients is upon the prognostication we are able to make of the conditions which exist. Therefore, I say to them that to examine one patient under an anesthetic is worth more than ten without an anesthetic; without an anesthetic you need not expect to get sufficient basis of knowledge upon which to build your superstructure. The principle here is the same as in dealing with diseases of the chest. You must select that form of examination which is capable of giving you the best results. Auscultation is the thing in diseases of the chest, palpation in diseases in the pelvis. Therefore, upon the perfection of the sense of touch, and upon the manipulation of those organs that are concerned in the sense of touch in the various channels in which we are able to approach the pelvic contents, vaginal or per rectum, depends the ease with which we seek after the exact condition and so become able to reach a proper conclusion. Now, then, whenever a man undertakes to begin an examination of that sort I drive into him, as forcibly as I am able to, that before he places his hands upon the patient he should have before him a mental picture of exactly the normal conditions as they should exist in the patient's pelvis. I also bring his imagination to bear upon the situation so that when he is in contact with some abnormality, whether it be a slight bulging of the femoral ring or inguinal canal or umbilicus, he will know at once that he is dealing with something outside of the normal. Then he can make up his mind as to the precise deviation which exists.

I am simply outlining the situation because I realize that I am talking to men as expert in the business as I am. I feel that I owe an apology for venturing to indulge in questions of this kind which seem to be the a-b-c of the work of all. Still, the Society has asked me to speak on this subject and I can only tell you what I do.

I believe the whole situation lies in the ability of the teacher to instruct the man how to make a diagnosis. It is impossible to make a diagnosis if he does not, in the first place, have the relaxation dependent upon the anesthetic. Secondly, he must have a knowledge of the anatomical, the pathological and the physiological situation that can only come from honest study of the various departments of the subject.

DR. EGBERT H. GRANDIN.—I appear before you as one who does not teach gynecology except in so far as individual clinics allow. I must judge those who teach gynecology according to the good book, which says, "By their fruits you shall know them." Therefore, without directing my remarks specifically to any previous speaker here to-night. I wish to tell you how gynecology should *not* be taught.

I am in sympathy with the statement made by Dr. West, that a man should not become a gynecologist until he has served a long apprenticeship as a general practitioner. What I feel about the average gynecologist is this: He is immature and, like a hound, he smells every uterus, vagina and ovary. He is receptive to the fact that women contain nothing more; he does not think that the women contain something more. In other words, 33 1-3 per cent. of the women to-day operated upon would not be operated upon if the men were better general practitioners and less immature gynecologists.

To come to specific facts I must say that I agree absolutely with Dr. Polk, but I am not in accord with Dr. Goffe when he quotes from Goodell, a book which I reviewed years ago for the *American Journal of Obstetrics* when our late lamented Munde was the editor. Also Keeting and Coe's classical work I reviewed for the same journal. I am not in accord with him when he read extracts and referred to me as a specialist in menstrual disorders. Take the average house officer as you find him, he is a menace to the profession, but not here in New York. The average house officer is a lobbyist. As a result he is a mighty poor physician, let alone a gynecologist. Not many years ago at a meeting of the American Gynecological Society a gentleman from one section of the country told another that he believed a certain method was good, but that he did not dare to teach it to his students; he did not think it was safe for them to do it. My answer was, do not graduate those students unless they are trained to do what they know is the correct thing to do. I am referring to the manual dilatation of the cervix. The man I have particularly in mind is a professor of obstetrics at the Johns Hopkins University.

To come down now to specific facts. The average house officer

makes a vaginal examination with two fingers; you cannot make a proper vaginal examination with two fingers. In that respect I agree with Dr. Goffe. Again, the average house officer uses that invention of the devil, the uterine sound. This should be used only for differential purposes. The man who cannot make a diagnosis of intrapelvic conditions without the use of the intra-uterine sound under ordinary conditions is not fit to be a gynecologist. I only use it for purposes of tearing tumors from the body of the uterus and in women so fat that you cannot make a diagnosis, because you cannot make your internal finger meet the external hand.

Again, house officers say that pelvic cellulitis exists. Shades of Emmett be blest! This does not exist except as a complication of a pelvic peritonitis. An abdominal section during life, followed by a post-mortem shows over and over again that this old phlegmon has usually disappeared.

Again, I am told that a trachelorrhapy should be done. If the cervix is diseased enough to require trachelorrhapy, then an amputation of the cervix is called for.

Again the house officers contend that everything can be done and should be done by posterior vaginal section, irrespective of adhesions with possibly an adherent appendix.

Again the house officers say that Alexander's operation should be done. Yes, if you understand what is inside the abdomen before doing it. Within three years I re-operated upon a woman who had been operated upon by a member of this society; he had done an Alexander operation, and I found the uterus still in the hollow of the sacrum.

DR. R. A. MURRAY.—The opportunity to teach comes to us in every operation we do. Some of the points brought out to-night are admirable. I think very favorably of one point raised, that the student who comes to learn a specialty should first have some training in general medicine. Secondly, when he goes into a specialty so largely surgical, he should be shown the necessity, as Dr. Polk has so well stated, of knowing his anatomy. We should also insist that he should have a sufficient experience in general surgery to have the surgical principles that are at the base of every surgical procedure thoroughly in mind. Next, we should insist when he is on the house staff that he should learn what other men have done. We would not have such an outburst if men knew what other men were doing, or had done.

A very great and important point was made by Dr. Polk, and it applies to the whole study of medicine and other sciences, that is, the use of the imagination. If a man is shown a thing, and told that such and such a thing is there, then when he sees a patient he should be able to have an image of conditions before his mind.

That is the only effective way to learn anatomy; that is the only effective way to learn disease. We should cultivate this habit.

We should not think of the dry detail but use our imagination more. We should economize time more. Dr. McCosh, of Princeton, has studied the imagination. He makes use of it. We do not use it enough. Our profession does not use it enough. We get a case and do what our judgment dictates. But for our knowledge to be effective, we must have imagination so developed and so applied that we will see before we undertake anything what we are to undertake to do for our patients. Then when we see a neurasthenic patient we will not make the mistake of saying that sewing the cervix cured the patient.

DR. EDWIN B. CRAGIN.—There are several roads which lead to Rome and not every teacher can work in the same way.

If I possessed the eloquence of Dr. Polk I should wish to teach by lecturing; if the artistic skill of Dr. Dickinson, I should depend largely on diagrams, but having neither of these gifts I have to solve the problem in another way.

It may be of interest to know how we work out the problem at the College of Physicians and Surgeons. With regard to the training of undergraduate students in gynecology, we only hope to lay the foundation for their work, not to make them gynecologists before graduation. It is hardly fair to say that unless they can do certain operations which experts do they should not receive their diploma. The medical course is not long enough for that. There are many operations I do myself which I do not teach my students to do. They must have time for development and further training before they start in performing certain operations.

In the preliminary training in gynecology, the lectures, as you all know, have taken a back seat as compared to former years, and yet I believe there is an ample field for a few lectures on certain phases of the subject after the student has been well grounded in the study from a text-book.

In our school the anatomy of the specialist is not taught by the professor of anatomy, but the specialist teaches the anatomy of his specialty.

In my judgment the best way to teach gynecology is to begin with a text-book, with lessons, recitations and demonstrations exactly as in an ordinary school. With this preparation the student is ready for lectures and practical work.

With regard to bringing students into touch with the patients, a most important element in modern teaching, it is not every school which has a hospital of its own and without this the practical teaching is often difficult to arrange. The College of Physicians and Surgeons has no hospital of its own, but by means of the Vanderbilt Clinic and through the courtesy of the officers of a neighboring hospital we are able to give our students this practical instruction.

It is diagnosis we teach first in the practical course. I hardly see how we could teach students the diagnosis of normal conditions if they only examined cases under anesthesia, as has been

suggested here to-night, for we do not anesthetize normal cases.

We should be able to teach the diagnosis of normal conditions by means of the numerous patients who come to a large clinic thinking they have pelvic troubles when they have none. After the student has become familiar with the normal conditions he is expected to put together facts learned while quizzing from the text-book during the previous months, and recognize abnormal conditions. In my judgment little is gained and much time is lost by undergraduate students attending operative clinics in major gynecology. On the other hand, much is learned if students in groups of four or five can sit or stand around an operator while he performs operations, such as the repair of the cervix and perineum, which they will probably do in their early private practice, and shows them each step in the procedure. It is along this line that we are striving to teach. Later in the course let them see major operations in gynecology, but first confine them to the minor operations.

We have another illustration that there are several roads leading to Rome in the statement made here to-night that only one finger should be used in making a vaginal examination. Personally, I believe that better work can be done with two fingers in the vagina than with one, and I always feel handicapped when the presence of the hymen limits me to the use of one finger. I am sure that with two fingers in the vagina I can make out small changes in the tubes and ovaries better than with one. All this shows that different men do their work in different ways. It is not fair to say that they must all do it in the same way. In teaching gynecology the principle is this: Let the groundwork be solid; train the students not only in anatomy and surgery but in pathology. My greatest regret in my professional life as a gynecologist is that I did not have a better training in pathology. A thorough training in anatomy, surgery and pathology and working away at diagnosis will bring the student as near perfection as he is likely to get.

DR. J. RIDDLE GOFFE.—I wish to emphasize a point, that the *tactus eruditus* exists in the brain and not in the end of the finger. One must be able to make a picture of what the sense of touch conveys. It is scientific imagination.

With regard to examining patients under an anesthetic. at Dartmouth when I have a limited clinic, I have used it, placing the patients under an anesthetic and examining them: this is made necessary because of the small amount of material at hand. But I have been surprised to find men unable to make a proper diagnosis of the proper position of the fundus of the uterus. It is a great help to have the patient under an anesthetic, but this is not feasible where there is a large class to handle.

DR. WILLIAM M. POLK.—The suggestion has been made that students be offered the opportunity to verify the observations they make by manual examination, exposing the abdomen to them

after the incision has been made. This is part of their instruction. In this way they are enabled to verify what they have found by the ordinary methods of bimanual examination. This is of enormous benefit to the examiner. Where there are half a dozen students, they are brought before the examiner and questioned as to what they found. Afterwards the abdomen is opened, exposing the real conditions there.

REVIEWS.

OBSTETRICS. A Textbook for the Use of Students and Practitioners. By J. WHITRIDGE WILLIAMS, Professor of Obstetrics, Johns Hopkins University; Obstetrician-in-Chief to the Johns Hopkins Hospital; Gynecologist to the Union Protestant Infirmary, Baltimore, Md. Second Enlarged and Revised Edition. Pp. 950, with 16 plates and 666 illustrations in the text. New York and London: D. Appleton & Co., 1908.

The second edition of this work is marked by the same qualities—thoroughness, scientific accuracy, and originality—that made it a success on its first appearance. The revision has been thorough and very many minor changes and additions have been made. The chapter upon the development of the ovum has been recast. The toxemias of pregnancy are discussed in the light of recent knowledge of the importance of the estimation of the nitrogen and ammonia coefficients and of the recent studies of the characteristic hepatic lesions found in these cases, studies in which Stone, Ewing, and the author have been prominently identified. Sections have also been added on vaginal Cesarean section, pubiotomy, and contractions of the pelvic outlet. Vaginal Cesarean section the author considers the ideal method for rapidly terminating pregnancy in all cases in which the cervix is undilated and rigid. Pubiotomy, he believes, will practically displace Cesarean section in the so-called “border line” cases, as it enables one to operate after several hours of second stage pains have demonstrated that the head cannot pass through the superior strait. Pubiotomy can be safely performed under such circumstances, while in Cesarean section the prognosis becomes progressively worse the later in labor it is performed. Pubiotomy will still further narrow the field for the induction of premature labor and practically do away with the use of high forceps, version, or craniotomy in moderate degrees of contracted pelvis when the mother is in good condition. The author also thinks it indicated in certain cases of funnel-shaped pelvis, and possibly in face presentations when the chin has rotated into the hollow of the sacrum.

The work as a whole bears evidence of very careful preparation, and while it is essentially a mirror of the author's own views, it can only be criticised in minor points. The style is clear and pleasant, the illustrations are well chosen and many appear for the first time in this edition. The typography and make-up are good. We predict for it long life and more editions.

A TEXTBOOK OF PATHOLOGY. By FRANCIS DELAFIELD, M.D., LL.D., Emeritus Professor of the Practice of Medicine, College of Physicians and Surgeons, Columbia University, New York. and T. MITCHELL PRUDDEN, M.D., LL.D., Professor of Pathology and Director of the Department of Pathology, College of Physicians and Surgeons, New York. Eighth Edition. With 13 full-page plates and 650 illustrations in the text, in black and colors. Octavo, pp. 1,057. New York: Wm. Wood & Co., 1907.

A critical review of a work so widely and favorably known as Delafield's and Prudden's Pathology seems as unnecessary as a formal introduction to an old friend. After an interval of a few years we greet the friend or open the book with a quite similar feeling of pleasure, and we look to see the changes in the body and mind of the man as we do in the form and text of the book.

The eighth edition of the "Pathology" comes to us well dressed and prosperous, with fine paper, clear type, and beautiful, well chosen illustrations of which over one hundred and fifty are new.

The text has been largely revised. The section devoted to general pathology has been rewritten and expanded and various phases of pathological physiology have received more attention than formerly. Much stress has been laid upon the relationships of pathology to the allied phases of biological science and disease has been considered in many cases as an adaptive process and pathology viewed as one aspect of the diverse manifestations of life and energy, rather than as belonging to a special and exclusively human domain.

The work includes a consideration of infection and immunity, describes concisely the lesions of the acute infectious diseases and, so far as they are known, the microorganisms inciting them, then takes up the various phases of degeneration and inflammation, the characters of tumors, the lesions of the general diseases, of poisoning and of violent deaths, the special lesions of different tissues and organs of the body, and gives the knowledge necessary for the making of autopsies, the preservation of tissue and their preparations for microscopic examination and outlines the characters and methods of study of pathogenic microorganisms.

The great and rapid accumulation of data in the wide field which the book covers has made necessary the exclusion of those

phases of clinical diagnosis and practical bacteriology which are now adequately covered in special treatises. The book is one that is indispensable to him who would keep abreast of the advances and new ideas of modern pathology.

THE PRACTICE OF OBSTETRICS. By AMERICAN AUTHORS. Edited by CHARLES JEWETT, M.D., Professor of Obstetrics and Gynecology in the Long Island College Hospital, New York. Third Edition, Revised and Enlarged. Octavo, pp. 820; illustrated with 484 engravings, 46 of which are in colors, and 36 colored plates. New York and Philadelphia: Lea Brothers & Co., 1907.

It is an unusual thing for a book of composite authorship to reach the dignity of even a second edition, so that when a third edition of this work is called for it indicates the possession of sterling qualities of merit and careful, thorough work on the part of its editor, Dr. Jewett. Without being too voluminous the work is encyclopedic in character, it is complete without duplication, and attains a uniform high level of authority. It is very freely illustrated. The present edition has been extensively revised. New sections have been written by W. S. Stone on the changes in the maternal organism caused by pregnancy, the duration of pregnancy, the hygiene and management of pregnancy, the anomalies and diseases of the fetal appendages, and the diseases of pregnancy. A chapter on malformations, injuries, and diseases of the newborn child has been contributed by Dr. E. H. Bartley. The section on symphyseotomy has been condensed and a brief account introduced of hebotomy and vaginal Cesarean section.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Mental Disease as an Indication for Interruption of Pregnancy.—Alzheimer (*Münch. Med. Woch.*, August 13, 1907) considers carefully the different forms of insanity and nervous disease that may occur during pregnancy with reference to their etiological relation to pregnancy and the possibility of affecting them favorably by interrupting the latter. He finds that there are not any forms of insanity that are caused by pregnancy. On the other hand, pregnancy is not unfavorably affected by the occurrence of mental disease. For these reasons interruption of pregnancy by the physician is not to be considered as justifiable to relieve mental symptoms. Neither is any amelioration to be expected as a result of the termination of pregnancy. In many cases the patient begs for the interruption of gestation and the

relations demand that abortion be brought about. The writer counsels the physician not to accede to their wishes unless he be fortified by a positive opinion from an alienist that benefit will result. In some cases of severe chorea and in eclampsia abortion is justifiable.

Abortion by Means of Roentgen Rays.—Manfred Fraenkel (*Zent. f. Gyn.*, August 3, 1907) made use of the x -rays in obtaining an abortion in a case in which, on account of the presence of tuberculosis, it was considered undesirable for the young mother to continue her pregnancy. The rays were used in the third month of pregnancy for twenty-five sittings of five to ten minutes each. The author had experimented on animals as to the effect of the x -rays in pregnancy, and found that there occurred a degenerative process of the ovaries with changes in the lumen of the bloodvessels and capillaries. These changes consisted in contraction and widening of the lumina of the vessel. He believes that the effect on pregnancy is caused by degenerative changes in the ovaries and glands rather than by its effect on the fetus. In the case of his patient the author believes that changes in the circulation may have affected the placenta, causing it to become loosened. There was marked bleeding at the time when the spontaneous abortion took place, which might indicate such changes. In this patient as well as in the animals experimented upon the rays produced a desire to urinate amounting to incontinence. Sterility was produced by the rays when applied for longer periods than when used for therapeutic effect. The author hopes that this use of the rays may aid in the cure of cases of osteomalacia, and thinks that they should be tried before castration is resorted to.

The Question of Myoma Operations in Pregnancy.—Karl Ernst Laubenburg (*Gyn. Rund.*, Bd. 16, 1907) advocates conservatism in the treatment of myoma by operation in pregnancy. He believes that it is not advisable to operate except when the tumor causes marked obstruction and renders delivery by natural means impossible. He has had some bad results from interference in such cases. The most important indication for operation is pressure on the bladder or other organs, by the absolute size of the growth which will prevent delivery. The location of the tumor may constitute another indication for interference. In such cases a vaginal enucleation undertaken early in the pregnancy is justifiable. Hysterectomy is not so successful as to justify its use when the vaginal method can be used. Early in pregnancy abortion is justifiable. In cases of uteri in which there are large numbers of myomata abortion is almost certain to occur. When operation is decided upon the tumor may be enucleated, through an incision in the capsule, shelling out the myoma with the scalpel handle.

Attempts at Abortion in the Course of Extrauterine Pregnancy.—N. Guerdjikoff (*Ann. de Gyn. et d'Obst.*, October, 1907) has observed in less than a year three cases of extrauterine gestation in which attempts had been made to produce abortion during a supposedly normal pregnancy. Each resulted in the death of the patient. In the first case the abortive measures were employed at about the sixth week of pregnancy, and septic infection took place as a result. In the second case the attempt was made five weeks after the last period. Chills appeared some three weeks later, followed by abdominal pains and tubal rupture ending in peritonitis. In the third case the abortion was attempted at about the seventh week of pregnancy. Five days later rupture of the tube occurred and fibrinous peritonitis. The immediate results of attempts at abortion in such cases seem to be slight abdominal pains corresponding to uterine contractions, and more or less abundant loss of blood. The tubal abortion occurs some time later as a result of infection. Rupture into the peritoneum is followed by pelvic or general peritonitis and death. A marked endometritis is found at autopsy and we may suppose that infection has extended through the cavity of the uterus and thus reached the sac of the extrauterine gestation. Intervention in such cases can be of use only when it is undertaken very early, before the symptoms of peritonitis have set in.

Fatty Degeneration of the Uterus in Pregnancy.—Marius Ciulla (*Zent. f. Gyn.*, September 14, 1907) has made a histological examination of three placentas removed at the time of Cesarean section by Bossi; one at the middle of the ninth month, one in the eighth month, and one eleven days over the normal period of delivery. He finds that during the last two months of pregnancy there is a fatty degeneration of the uterus which acts upon the hypertrophied muscle fibers of the uterus. A fatty infiltration of the hypertrophic fibers takes place and they are reduced in volume until they take on their normal dimensions and form. This fatty degeneration at the end of pregnancy explains the muscular excitability of the uterus at the time of delivery. It also accounts for some cases of subinvolution and of hyperinvolution of the uterus. In delayed labor this is the etiological factor through an excessive fatty degeneration, while in premature labor this fatty degeneration fails to take place. This fatty degeneration, allowing the globules to pass into the blood, may serve to produce the first secretion in the breasts. The acute fatty degeneration of the puerperal period may cause the secretion of milk in the breasts.

Rupture of the Gravid Uterus.—Rouffart and Delporte (*Ann. de la Soc. Roy. des Sci. Med. et Nat.*, Vol. XVI, Parts 1 and 2) divide rupture of the gravid uterus into traumatic rupture, and rupture due to anatomopathological lesions of a diffuse nature, the traumatism being secondary to these changes. The

traumatic cases are most frequent, being caused by violence which has left behind it a cicatrix through which the rupture occurs. In the second group there are found in the uterine wall diffuse lesions of various kinds which render the walls so weak that a slight accident brings about a rupture. The body of the uterus is much exposed to violence from without as soon as it rises above the symphysis pubis. This occurs after the fourth month. Hemorrhage is a danger whether the perforation be completely through the walls, or arise from a separation of the placenta. When there is a complete perforation of the uterine wall the retraction of the muscular fibers causes the rent to be enlarged until the ovum escapes into the abdomen. A violent contusion of the abdomen may produce this lesion. It is believed to be necessary that degenerative changes of the walls should have previously taken place. Attempts at abortion may cause uterine perforation and rupture. These wounds are generally in the posterior wall of the uterus and the fetus is generally broken up at the same time. Old cicatrices play an important part in these injuries, such as may arise from curettement, enucleation of myomata, or Cesarean section, the cicatrix being thin and having no retractile power. Such an injury has been caused by digital curetting. In some cases vicious insertion of the placenta repeatedly taking place in the same location is responsible for the degeneration of the wall. Tuboovarian pregnancies may result in an apparent uterine rupture. The changes that occur during pregnancy may cause a weakening of the uterine wall. The elastic fibers are here much changed. Previous uterine disease may have weakened the walls. The authors observed changes in the uterine walls in a young woman, in which the villi of the placenta had penetrated so deeply into the uterine walls that the process was absolutely pathological and resembled a neoplasm. Necrotic lesions had taken place which reduced the resisting power of the wall. The trophoblast had taken on abnormal and atypical functions. There was degeneration of the muscle and loss of elasticity, which allowed of rupture from a trivial cause. A previous curettage may have assisted in producing the changes that have taken place.

Twenty-five Conservative Cesarean Sections Without Maternal Mortality.—Eliseo Canton (*Ann. de Gyn. et d'Obst.*, September, 1907) gives the conclusions at which he has arrived after a series of twenty-five Cesarean sections made without any maternal mortality. This operation is one that need not be dreaded since asepsis has rendered the results so good. In contracted pelvises of a diameter less than seven and a half centimeters, with a living infant of normal development the Cesarean section will be indicated absolutely to save the life of the child. Cesarean section should be done whenever the disproportion between the diameters of the child's head and of the pelvis does not permit

of the delivery of the living child after several hours of vigorous contractions. Under the same conditions the Cesarean section is to be preferred to symphyseotomy in the interests of the child. If those of the mother are more important, symphyseotomy is to be preferred. Pubiotomy is to be chosen when the interests of the mother are paramount to those of the child. In case of fever or infection pubiotomy is to be selected. Section is to be preferred to version under the same conditions. Between premature labor and hysterectomy one would choose the first on behalf of the child, the second on behalf of the mother. In severe eclampsia forced labor is to be preferred to the section. Uterine hemorrhages will not permit of the performance of the section. Other contraindications are infection, heart troubles, cancer, and tumors in general.

Therapeutics of Dystocia from Pelvic Deformity at the Baudelocque.—A. Pinard (*Ann. de Gyn. et d'Obst.*, September, 1907) says that his conception of dystocia due to pelvic contraction has undergone a change marked by progress during the time of his connection with the Baudelocque Clinic. He now adopts the following conclusions as a result of eighteen years of experience: Never interrupt pregnancy whatever the amount of pelvic contraction. Never practise during labor any operation that will cause the pressure of the fetal head against bony resistance, either at the superior strait or in the pelvic cavity. As operations for pelvic contractions only Cesarean section, enlargement of the pelvis by symphyseotomy, pubiotomy or ischio-pubiotomy, and Porro's utero-ovarian amputation are to be considered. By following these directions the author believes that the mortality in labor may be materially decreased.

Pubiotomy.—Josef Bäcker (*Gyn. Rund.*, Bd. 18, 1907) discusses the relations of pubiotomy and symphyseotomy and their advantages. The strongest argument against symphyseotomy has been that a wound of a joint is more difficult to heal than that of a bone; but the symphysis is not a true joint and possesses no synovial membrane. If it is more open to infection the answer is perfect asepsis. The symphyseotomy wound cannot be well protected against infection if we await a spontaneous delivery after the operation. The mortality of pubiotomy and symphyseotomy is not less than that of Cesarean section and injury of the soft parts is liable to follow either of these operations. The most frequent is injury of the corpus cavernosum, of the clitoris, or the pudendal artery, either of which will produce hemorrhage. With the subcutaneous method this is still more liable to occur. The bladder and vagina may be injured, especially when previous inflammatory processes have caused adhesions of the bladder to the symphysis. The liability to injury of the bladder when in its natural position is greater in symphyseotomy, but the

pubiotomy needle may also puncture it when used subcutaneously. In third degree contractions the delivery of the child may cause tearing of the bladder through the force necessary to delivery. The dangers seem to be equal in these two operations, but by improvement of technique they may be lessened in pubiotomy. Advocates claim greater widening of the pelvic diameters in symphyseotomy. The author finds that the increased width is equal in the two operations. Severe degrees of contraction are not suitable for either of these operations, but should be left to Cesarean section. The pelvic outlet is not much increased in width on account of the pelvic diaphragm which resists the spreading of the bones. The oblique diameter is increased more than the antero-posterior diameter. The widening seems to be about the same in the two operations, and the limits are the same, only the second grade of contraction being suitable for them. The union is generally fibrous in both cases, a bony union being rare, and fibrous union allows of a little more room by stretching of the point of union during the next delivery. The author believes that these two operations stand on the same plane and are equally indicated. But the mortality has not been much reduced by the use of these operations. It is 5 to 6 per cent. for the mother. The soft-part injuries and the formation of hematomata are distinct disadvantages of them and infection may occur. Hemorrhage is generally slight, but hematomata constitute a distinct danger. Most of the soft-part injuries may be avoided by care in delivery. The author believes that only the original form of pubiotomy is justifiable, and that the subcutaneous form should be discarded. At the present day the tendency is to await a spontaneous delivery after operation, rather than to deliver by forceps or version.

Hematoma Vulvæ as Hindrance to Delivery.—Alois Rosenberger (*Gyn. Rund.*, Bd. I., H. 17) tells us that hematoma of the vulva is seldom so large as to constitute a hindrance to delivery. The chief symptom is the sudden appearance of a tumor at the vulvar orifice. Winckel found one case in 1,600 cases of pregnancy. The increased pressure of the second stage of labor, or pressure of the hard parts of the child causes the rupture of vessels of the labia and the result is a hemorrhage which forms a vulvar tumor. It may be the size of a child's head. It is generally not very large during labor, but after delivery bleeding may again begin and then the tumor reaches its greatest size. Symptoms are anemia, swelling of the vulva, and desire to urinate. Treatment should be expectant. If it does not increase in size after labor we may expect resorption. It may be necessary to incise the tumor, empty out the clots, apply pressure to stop bleeding, and ligate the vessels. In the case observed by the author the swelling was so large that delivery became impossible. It was necessary to incise the tumor, and

to make pressure during the delivery to control hemorrhage. After delivery the bleeding was stopped and the patient recovered completely without complication.

Puerperal Uterine Inversion.—Samuel Cache (*Ann. de Gyn. et d'Obst.*, October, 1907) says that uterine inversion is a grave but infrequent accident. In the author's experience it occurred twice in 4,600 labors. It is generally of puerperal origin. It usually occurs outside of the hospitals, where cases are well taken care of, and the patient is brought in for treatment after the accident has happened. It often results from injudicious pressure on the fundus after delivery or improper traction of the cord in the removal of the placenta. A too short cord or a very rapid delivery may aid in producing the accident. Inertia may have caused the loss of contractility and retractility in the uterine wall. Adherent placenta or its insertion in the deepest part of the uterus are also favoring factors. Delivery by expression, severe coughing, and delivery when standing all favor its occurrence. There are three degrees of inversion: simple depression of the fundus; fundus depressed to the cervical orifice, and complete inversion. Symptoms are pallor, hemorrhage, pain, desire to urinate, loss of strength, and inability to palpate the hard, contracted fundus. The two cases described by the author were successfully treated by reduction.

Experimental Examination of the Beginnings of Streptococcus Venous Thromboses.—Heinrich von Bardeleben (*Arch. f. Gyn.*, Bd. 83, H. I.) questions why the same pathogenic cause at one time produces a general infection and at another a merely local affection. He believes that this arises from the way of entrance of the organism, as well as the degree of virulence of the germ. The second factor is hard to measure. The method of entrance is by the muscular pressure of the uterine contraction forcing the germs into the open mouths of the veins. This will occur only with uterine atony which allows the veins to remain partially open. To close them thrombi must be formed. Only thus can the streptococci enter the circulation. With a normally contracting uterus the vessel mouths will be firmly closed. The germs must then pass through the vessel walls. Later they may pass through the vessel walls or through the formed thrombi. The venous system of the uterus consists of a plexus of narrow capillaries. When deprived of the muscular action of the uterus stasis easily takes place in them. In this way arise the aseptic thrombi. The author has made extensive animal experiments by injection in various ways of streptococci of different degrees of virulence to determine the different methods of infection. When the germs are introduced into the vessels two forms of thrombosis occur, the virulent and the avirulent. By transparietal introduction there is but one kind, the

virulent. Severe septic thrombophlebitis is found in those who die quickly and in those who have had early operations performed. These thromboses do not contain pus, and there are active hyperemia and edema. In cases in which there is thrombophlebitis the virulence of the streptococci is less. The streptococci enter by way of veins filled with coagulum. Pyemia follows infection with germs of low virulence, general sepsis that with those of higher degrees of virulence. The author considers the relations of the streptococci and the leukocytes. The erythrocytes are destroyed by the germs. The leukocytes are active and a struggle goes on between them and the cocci. The toxins of the cocci act upon the leukocytes to destroy them. The streptococci become more virulent and conquer the leukocytes. The resistance of the vessel walls is another obstacle to the cocci in intra-venous infection. If the virulence is slight they are unable to penetrate the vessel walls. The blood must have stagnated to produce venous thrombosis. The possibility of direct entrance into the blood stream is small and this occurs only with very virulent forms. Others brought in small numbers into the blood stream are destroyed. Even virulent streptococci find entrance more easily by way of the lymphatics. The usual route of entrance is by collapsed veins. If these are closed by coagula they may be penetrated by the bacteria. If the latter are virulent they may even enter through the wall. The prevention of puerperal infection is by firm closure of the vessels. Infection can only take place when this does not exist. Atony and venous hyperemia favor infection. Infection directly from the uterine cavity can occur only through uterine thrombi. Increased virulence and lower leukocyte vitality permit further infection. Puerperal thrombophlebitic pyemia can be cured by closure of the central vessels since it arises from cocci of only moderate virulence which will not pass the walls of the veins. A cure may be effected by ligation while there are no general symptoms of infection. Germs of higher virulence penetrate the vessel walls and the infection becomes general. It is difficult at first to distinguish these two forms. In the pyemia cases we should not expect a sudden onset. By waiting a while we lose nothing and the symptoms become clearer.

Treatment of Puerperal Infection.—Auguste Turenne (*Ann. de Gyn. et d'Obst.*, August, 1907) sums up as follows the rational treatment of puerperal fever at the present day: No hope of a specific treatment of this condition can be justified. A combination of methods will give success in a moderate number of cases. The chances of success depend on the early discovery of the primary localization of the infection, followed by an opportune procedure not of a violent nature. Immediate and thorough uterine evacuation is indicated, whether there be clots, membranes, or placental remains. Instruments should be used for

this purpose only under the control of the finger. Intrauterine injections should be replaced by instillation; extrauterine localizations of infection should be treated early, not forgetting their tendency to resolution.

GYNECOLOGY AND ABDOMINAL SURGERY.

Treatment of Occipitoposterior Presentations.—David Hardie (*Jour. Obst. and Gyn.*, British Empire, Sept.) says occipitoposterior presentations occur in about one-third of all vertex presentations, and in 85 per cent. of these the head lies with the occiput to the right and in 15 per cent. to the left. In nearly all such cases rotation forwards takes place sooner or later before the termination of labor, but it is estimated that in from 1.9 to 4 per cent. this does not occur. Apart from the danger of severe rupture of the perineum in the latter cases, the prolongation of labor in all occipitoposterior presentations, amounting to at least three or four hours, is a matter of great importance to the mother and child, as well as sometimes of concern to the accoucheur. Should the position be ascertained at the commencement of labor, before the membranes have ruptured, rotation by external manipulation is an ideal method, and may be successfully accomplished, but as the diagnosis may be wrong, and the patient is seldom seen in time, the range of this method will in practice necessarily be limited. When the head has entered the brim—the membranes being entire—the only thing that can be done is to place the patient under the most favorable circumstances for natural rotation to take place. Bearing in mind that the center of gravity of a child, as was first pointed out by Matthews Duncan, lies towards its back, the latter, when the patient is in a recumbent position, tends to gravitate round the axis of the child to a lower plane. Assuming that the occiput enters the pelvis in the posterior part of the right oblique diameter, the occiput has a tendency to occupy the transverse diameter, if the patient lies on her right side. Hence when the occiput is to the right, she should lie on her right side, and *vice versa*. Beyond this, nothing whatever should be done to assist rotation until labor has well advanced into the second stage. Then comes the time for active interference, if need be. Before taking any step in this direction, it is necessary to remember a fact that is universally recognized by obstetricians, namely, that the part of the head that is lowest in the pelvis during labor is the part that tends to rotate towards the symphysis pubis. It follows that if, in occipitoposterior presentations, the posterior fontanelle is within easy reach, the chances are that, in course of time, the occiput will rotate to the front. Similarly, if the anterior fontanelle is the most prominent part, rotation forwards of the occiput is much less likely to take place. In the former case the occiput bears upon a resisting pelvic floor, and is so pushed forwards; in the latter case the occiput is not sufficiently low to be acted upon in this way.

Our first object in treatment, then, is to increase the flexion of the head, so that the sinciput may recede and the occiput may occupy a lower plane in the pelvis, or, in other words, so that the suboccipitobregmatic, instead of the occipitofrontal diameter, may pass through the pelvis.

The position of the head having been ascertained, the patient is placed on that side towards which the occiput is directed, if this has not already been done. Flexion is then induced by pressing one or two fingers steadily against the sinciput. The pressure is directed, not only upwards and slightly backwards, but with an inclination to one side or the other, as the case may be, with the object of both flexing and rotating the head at the same time. It is best to begin this, not during a uterine contraction, but between the pains, because of the greater facility with which the position of the head can be altered. The head being kept in its altered position until the pain returns, steady pressure is maintained during the uterine contraction over the sinciput with the object of preventing the head from slipping back to its original position. This cannot, as a rule, be done at first, but by repeating the procedure when the pain passes away, and keeping up counter pressure during the contraction, it will often be found in the end that our efforts are successful. Time is, however, an important factor to all concerned, and if, after a reasonable time, certainly not more than half an hour, there is but little perceptible change in the relative position of parts, we must act boldly and make more radical efforts to rectify the malposition and effect delivery. Fortunately, this is within our reach, without risk to either the mother or child, and fortunately also, it can be done during any period in the second stage of labor, even when the occiput is pressing down the perineum. To allow labor to be further prolonged, in the hope that rotation will eventually take place, or to allow the head to be delivered without rotation having been accomplished, is surely to bring a stigma on the practice of obstetrics. The use of the forceps for combined traction and rotation in these cases should only be named to be condemned, while its use for traction alone can only be justified after efforts to rotate by other means have failed. The method which seems the easiest, safest, and most effectual is that of

Rotation by the Hand.

This Hardie divides into two classes, according as the head is in the fairly advanced second stage of labor, or is bearing on the perineum. (a) In the fairly advanced second stage of labor the progress of the latter being distinctly retarded. The patient, having been anesthetized, is placed on her left side, whether the occiput lies to the right side or the left, because convenience of manipulation on the part of the accoucheur is of first importance. In the case of a right occipitoposterior presentation, the right hand, with its back

looking upwards, is introduced into the vagina. The fingers having been passed along the upper surface of the head, nearer to the sinciput than the occiput, and the thumb placed over the opposite or lower temple, the head is gripped with the whole hand, flexed, and rotated, so as to occupy the left oblique diameter with the occiput in front. The hand, in its course, passes under the symphysis pubis, and now lies to the left of the patient, with the palm looking upwards. Without removing the hand, the lower blade of the forceps is now introduced. This keeps the head in its altered position until the upper blade of the forceps is applied. With the forceps in position, the chloroform may be discontinued for a short time and labor allowed to go on in the natural way; or, better, the chloroform may be continued and labor completed by forceps. The placing of the hand in position, the process of flexion and rotation of the head, and the application of the forceps, take less than five minutes to accomplish, and, if the delivery be completed by forceps, the duration of labor is shortened by at least two to three hours. There is no necessity to concern oneself as to whether the body will rotate with the head, as in the event of this not happening, it does not involve any risk to the child. The head has certainly been rotated, by the hand, round two-eighths of a circle, and, by the forceps, another eighth before the head is delivered, but this may be done without injury to the spinal cord. If there be any anxiety on this point, the left hand may endeavor to rotate the body concurrently with the rotation of the head, but in practice it will be found of no importance, whether this be done or not. That the body does actually rotate, however, is shown by the shoulders being found in that oblique diameter of the pelvis which the head originally occupied. In the case of a left occipitoposterior presentation, either the right or left hand may be employed. If the right hand be used, it is slipped along the lower surface of the head, with the palm looking upwards, turns under the symphysis pubis to the patient's right side, and, when rotation is completed, lies with its palmar surface looking downwards. The forceps is then applied, but, on account of the position of the hand, the upper blade must be applied before the lower. Should the left hand be used for rotation, instead of the right, it passes over the upper surface of the head with the palm looking downwards, turns round in front of the perineum to the patient's left side, and lies with its palmar surface looking upwards, ready for the application of the lower blade of the forceps. It will thus be seen that when the right hand is used for flexion and rotation purposes in cases of left occipitoposterior presentations, it grips chiefly the sinciput, and sweeps round the arch of the pubes from left to right of the patient, and the upper blade of the forceps is the first to be applied; when the left hand is used, it grips the occiput, and sweeps round in front of the perineum from right to left of the patient, the lower blade of the forceps being the first to be applied.

(b) In the late second stage of labor—the head being over the

perineum: Flexion and rotation can be accomplished here, in the manner above described, but, on account of the low position of the head, it is unnecessary to pass the whole hand into the vagina. Flexion may be aided by pressure on the sinciput with the left hand, thus materially helping the right or operating hand. He has never failed to rotate the head in this way, without injury to the mother or child, even when the occiput is bearing down the perineum. If, however, the medical man has been in attendance for some time, he should not have allowed valuable time to be wasted, and should have effected restitution of the head before the second stage of labor had advanced so far. The time for active interference depends upon the progress of the case, and, as the medical attendant is generally sent for long before the occiput has reached the perineum, this is a question which he can and must decide for himself.

Congestive Conditions in the Female Sexual Organs and Appendicitis.—Georg Glücksmann (*Berl. Klin. Woch.*, August 26, 1907) says that the neighborhood of the appendix to the right adnexa makes difficult the differential diagnosis between appendicitis and disease of the ovaries and tubes. The folds of peritoneum that directly connect the organs render infection of one liable to be communicated to the other. Appendicitis may be complicated by irregularity or pain of the menstrual periods. On the other hand, the appendix may be diseased with normal adnexa. Dysmenorrhea may be of nervous origin, entirely reflex from the disease of the appendix. The author cites two cases in which an attack of acute appendicitis began on the same day as the coming of the menstrual period. The menstrual congestion may have precipitated the attack. It causes the appendix to become turgescient and rigid. Infection may arise more readily at this period. The author advocates an early examination, in spite of the appearance of the menstrual period, in all cases in which appendicitis is suspected.

Treatment of Dysmenorrhea.—Oscar Polano (*Münch Med. Woch.*, August 27, 1907), after enumerating the causes and varieties of dysmenorrhea, describes a new method of treating those cases that are benefited neither by operation nor by any other method of treatment, and which form the bulk of the clinical material met with by the physician, which is affected by this form of trouble. This method of treatment is harmless and simple and may be applied by the patient herself after instructions by the physician. It consists of the application to each breast a few days before the menstrual period and throughout its occurrence of one of Bier's suction glasses. The air is exhausted by a syringe or a rubber bulb, and the application should last for from one-quarter to one-half hour daily. It causes a marked congestion and swelling of the mammary gland which is painless. Its effect on the dysmenorrhea is very satisfactory. Its application is based

on the well-known relation of the breast secretion and the ovarian function.

Pyometra in Uterine Cancer.—André Lomon (*La Tribune Méd.*, August 31, 1907) says that cancer of the uterus is generally the cause of pyometra. In general it occurs in women of advanced age long past the menopause. The reason of this is to be found in senile sclerosis of the cervix which results in the damming up of any fluid that arises in the cervical canal after the cessation of menstruation. Pyometra develops slowly without marked symptoms and may be periodic. In a normal state the secretion of the uterine mucous membrane after the menopause is sufficient to cause retention. The uterine cavity is free from germs, the vagina destroys them, and all the genital organs are normally free from them. The only portion where germs are to be found is the cervix. In cancer of the uterus this condition is profoundly modified. The tumor produces circulatory troubles and favors infection. There is a metritis of the body and a profuse discharge from the mucous membrane. Senile sclerosis of the cervix confines this discharge in the cavity of the uterus. The condition may be latent and be observed only at some operation for the cancer. It may be intermittent, and when the organ is distended it may force out the collection of pus, especially when the patient is in the vertical position. This may be exceedingly painful, the pain irradiating into the lumbar regions and ceasing after evacuation of the collection with colic. The prognosis is not bad, the only complications being the possibility of intraperitoneal rupture of the collection, or rupture during operation. A careful washing and disinfection of the cavity will remove all danger of sepsis. In operating for the tumor by the vaginal route it may not be easily brought down through the vagina. Diagnosis is not easy in the latent form. Palpation must be relied upon. The uterus should be measured and catheterized whenever such a complication may be present, and if the cervix cannot be entered one should not hesitate to make a passage through the cervical tissue to let out the collection. Evacuation is the only treatment when catheterization is not possible; this should be followed by dilatation and cleansing of the cavity, which must be kept open.

Inflammatory Tuberculosis of the Cervix Uteri.—Gaston Cotte (*Gaz. des Hôp.*, September 10, 1907) describes a case of hypertrophic cervical metritis with bilateral involvement of the adnexa, in which the serodiagnosis showed the affection to be of tubercular nature. Histological examination of a fragment removed showed only simple inflammatory lesions. The patient had never shown any signs of gonorrhea, although her disease manifested itself two months after sexual relations had taken place. There was diffuse involvement of the adnexa, which gave the impression of some vacillary involvement of these organs. Sclerotic lesions were found such as are frequently the result of

tuberculosis. Diffuse lesions that are observed in tubercular patients may be attributed to the bacilli. In all probability a considerable number of cases of simple inflammatory metritis and of ovarian sclerosis are of tubercular origin. There are three forms of genital tuberculosis: miliary tuberculosis of the cervix, ulcerative tuberculosis, and papillary fungating tuberculosis of the cervix. To this should be added a simple inflammatory type of infection. This has been described as catarrhal tuberculosis of the cervix.

Instrumental Perforation of the Non-pregnant Uterus.—Felix Heymann (*Berl. Klin. Woch.*, August 12, 1907) has collected sixty-four cases of instrumental perforation of the non-pregnant uterus, one of which he observed. This accident is often caused by the curette, yet it may also be caused by the use of forceps, dilators, intrauterine electrodes, and other dull instruments. Of his sixty cases, forty-seven were caused by the curette. Some cases were predisposed to rupture of the uterine wall by softening or degeneration of the muscular tissue, or by uterine paralysis. Diagnosis is generally made by the sudden passing of the instrument into an unresisting cavity. In other cases it is made only from abdominal pain or during operation for other diseases. In thirty-two cases it accompanied some other condition that necessitated operation. Thirty times it caused abdominal pain. In many cases, on the contrary, it caused no pain. Two deaths occurred from sepsis, one due to carcinoma, the other to a gangrenous myoma. Perforation is much more dangerous when made by an injecting instrument, the solution entering the abdominal cavity. Aside from this complication it is generally susceptible of cure by conservative treatment, such as rest and cold applications. The uterine walls tend to close at once and heal easily. Dangers are hemorrhage, which is generally slight, infection, which is infrequent from this cause alone, and peritonitis. When injection fluid has entered the abdomen the best resource is total extirpation of the uterus.

DISEASES OF CHILDREN.

Deviations of the Spine in Young Girls.—Ester (*Ann. de Méd. et Chir. Inf.*, April 15, 1907) says that deviations of the spine are very frequent, and involve the capacity of the abdominal and thoracic cavities, compressing the heart and lungs. The spine is predisposed to deviation by its anatomical constitution and functions, as well as by a considerable number of morbid conditions. Deviation may be caused by conditions that do not reside in the spine itself, such as shortening of one leg, myopia causing the patients to bend over, or timidity. It may result from tuberculosis or rickets. One of the most frequent predisposing causes is feebleness of the muscular system combined with hereditary influence. The ordinary life and limitations of a young girl do

not permit of her having the exercise and outdoor amusements that boys enjoy, and this results in a lack of muscular development that causes muscular feebleness. Scoliosis is very frequent as a hereditary condition, children of parents that have suffered from scoliosis having the same trouble, and it being even transmitted to the third generation. The determining causes include bad attitudes maintained at study, in writing, and in sewing. Scoliosis is only really curable when it is just forming, in the period of muscular development. Hence it is necessary to watch young girls carefully so as to note the first signs of its appearance. To do this the girl must be undressed so that one can carefully examine the line of the vertebræ and the position of the shoulders. The sign first noticed is that one or the other shoulder is higher than the other. The preventive treatment is most important. It consists of giving girls who have grown fast, and are weak and flabby, more rest, allowing them to stay late in bed in the morning, and lie out in the open air in a steamer chair. Place a plank under the mattress so as to get a firm bed, and let the girl lie on it to rest during the day. The room occupied should be large and sunny. The food should be the most nourishing. These children should be allowed to bathe and swim, and to go to the seashore and mountains in the summer. No corset should be worn that will at all compress the thorax, and it should be perfectly pliable. The girl should be provided with a chair that supports the back, and a desk that is inclined. Curative treatment involves the same factors, combined with the use of orthopedic gymnastics twice a day for a half hour. These exercises are done on the back and under suspension, combined with counterpressure over the salient points. Massage and electrotherapeutics are most important. When the scoliosis is of the second degree, and disappears under suspension, but not by voluntary movement, there should be added an orthopedic corset, moulded over a plaster cast of the body when under suspension. In the third degree, when the deformity cannot be reduced at all, maneuvers of replacement under anesthesia are necessary, but even these will not bring about a cure, so that the preventive treatment is by far the most important.

Consanguinity as a Factor in Immunity to Scarlet Fever.—J. W. Brandeis (*N. Y. Med. Jour.*, July 27, 1907) has been impressed with the fact that scarlet fever occurring in large families as a rule gave rise to no secondary cases. Combining the figures of cases seen by himself and by others a total is obtained of 142 children exposed, with 16 secondary cases developing, or a little over 11 per cent. In contrast to this Holt says that about 50 per cent. of all children exposed to scarlet fever are attacked with the disease; Koplik states the same figure; and Carr places it as high as 56 per cent.

Serum Treatment of Scarlet Fever.—H. W. Cheney (*Chic.*

Med. Rec., April 15, 1907) describes the use of Moser's scarlet fever serum. Bouillon cultures from the heart's blood of children who have died of scarlatina are injected into a horse at weekly intervals for several months. Its blood serum is used without addition of preservatives. A large dose is necessary, 200 c.c. or six and a half ounces being usually given hypodermically in the skin of the abdomen or back. After the injection the action of the serum begins to manifest itself within six to twelve hours. A marked change occurs in the temperature, which falls oftentimes to normal without reaction or symptoms of collapse. The pulse also shows a similar change, the reduction often being from 140 or 150 to 100 or 110 within twenty-four hours and the heart beats are stronger and more regular. Perhaps the most noticeable change is the rapid betterment of the child's general condition. He soon presents a fresher appearance, takes notice of his surroundings, sits up, and shows a desire for food. The rash, after an early injection, either does not develop fully or fades away more rapidly than usual. The severe nervous symptoms such as delirium, restlessness, prostration, or somnolence disappear. As with other therapeutic sera, the earlier in the disease the injection is given, the better the results. Cases injected after the third day have a much higher mortality rate than those treated early. A second injection is rarely given. One full dose given at the beginning has been found sufficient in the majority of cases. No bad effects follow the injection except the serum exanthem which occurs in 75 per cent. of the cases. This appears from eight to twelve days after the injection, and its frequent occurrence is probably accounted for by the large amount of serum necessary for one dose. The serum does not prevent the occurrence of nephritis or otitis media, but these appear with less frequency and in a smaller percentage of the cases. While it does not cure all cases, the results from its use seem favorable.

Is Scarlet Fever a Streptococcus Disease?—In 100 unselected cases in a mild epidemic, most of the cases over ten years of age and many over twenty, Ludvig Hektoen (*Jour. Amer. Med. Assn.*, April 6, 1907) found streptococci in the throat cultures of all cases. He says that the predominant feature of the bacteriology of the throat in scarlet fever is the constant presence of large numbers of *Streptococcus pyogenes*; that the overwhelming majority of the so-called complications and of the deaths in scarlet fever are due to invasion of the tissues and the blood by this microbe; and that in scarlet fever, even when mild, the organism gives evidence of systemic reaction to streptococci by variations in the streptococco-opsonic index and probably also by the formation of streptococco-agglutinins. While there is, therefore, no escape from the conclusion that *Streptococcus pyogenes* or some form thereof plays a most significant part in the scar-

latinal process, he questions whether we are ready to conclude that scarlet fever is wholly a streptococcus disease, all the phenomena of which, including the acquired immunity, are satisfactorily explained by the distribution of the cocci in the tissues and by the intoxication with their products. The writer says that there is no analogy in recognized streptococcus infections of the immunity conferred by scarlet fever even when mild. There is no evidence that scarlet fever leaves behind it any lasting immunity to streptococci, and it is known that the specific immunity which results from streptococcus infections in general is not at all marked and is only brief in duration. Consequently if scarlet fever is caused by a form of *Streptococcus pyogenes* this must be assumed to possess very pronounced and peculiar immunizing properties, of which as yet we have been unable to discover definite experimental or other evidence. Study of the bacterial content of the skin and scales of scarlatina forces the conclusion that if streptococci cause scarlet fever they reach the surface of the body so rarely that the infectiousness of the skin must be greatly overrated. Medical literature contains numerous instances of apparent conservation of the scarlatinal virus over long periods of time—several years—whereas the longest time that Weaver could cultivate streptococci from preserved scarlatinal material was 90 days. The writer believes that the view that the specific cause of scarlet fever is not known and that the streptococcus is a concomitant or secondary invader for the growth and activity of which the conditions in this disease are peculiarly favorable, harmonizes best with the facts now at hand.

Streptococcus Erythema and Its Relations to Scarlet Fever.

—G. Gabritschewsky (*Berl. Klin. Woch.*, May 6, 1907) tells us the streptococci may produce eruptions that much resemble scarlatina in the course of septic infections. Such eruptions may also result from vaccination with scarlet fever streptococci. The punctiform erythema and exanthemata resulting from scarlet fever and streptococcus vaccines may be regarded as identical in form and appearance. The fact that in men the application of vaccine derived from the streptococcus of scarlet fever will produce a rash exactly like that of scarlet fever obtained by ordinary contagion is a strong argument for the etiological relation of the streptococcus to scarlet fever. This fact also forms a basis of support for the serum treatment of scarlet fever, and for the value of vaccination of children to prevent an attack of scarlet fever as well as to forestall the ordinary complications of the disease. The reaction after vaccination is characterized by the rapidity with which it occurs after the injection, since it appears at once, and is well developed on the second day. The desquamation is slight and the rash is not widespread. Kidney affections are rare after vaccination. There is slighter angina, and no membranous formation. The rise of temperature is seldom

over 39° C. and the fall of temperature is rapid. The symptoms of intoxication are slight. The disease is not contagious to other children in the same house.

Early Ulcerative Angina in Scarlatina.—Labrouey (*Jour. de Méd. de Paris*, June 2, 1907) says that in scarlatina there may be, independently of pharyngeal or diphtheritic manifestations, a form of ulcerative angina. Its pathology has not been elucidated as yet. It is characterized by a single ulcer located on the tonsil, and having no tendency to extend. The general symptoms are quite severe. There is very marked engorgement of the cervical glands without suppuration. It comes early and is coincident with the eruption. It may be confounded with diphtheritic ulceration, syphilis, fusospirillar angina, buccopharyngeal herpes, and gangrenous ulcerations. The prognosis is good in most cases. When severe the ulcer perforates the palate and life is endangered. Local treatment consists of touching the ulcer with phenol, or sulphate of zinc, or hydrogen peroxide. Methylene blue may be added as more antiseptic.

Cardiovascular Affections in Congenital Heredosophilis.—L. Landouzy and Laederich (*La Presse Méd.*, May 29, 1907) describe a case of cardiopathy which was of undoubted syphilitic origin, and state their belief that such conditions as a result of syphilis are not rare, it being a frequent cause of such troubles in infants. The mother had had a chancre followed by secondary manifestations: the baby had a profuse eruption when two months old. Post-mortem histological syphilitic lesions were found in the kidneys, and spirochetes were found in the skin and suprarenal glands. Here there was a malformation of the aorta, which was exceedingly small, and a much enlarged and thickened right ventricle with failure of the foramen ovale to close. There was no cyanosis, but there was difficulty in breathing and the infant died of bronchopneumonia. There were no other malformations, no souffle in life, and no cardiac thrills. If such cases are recognized early enough one may hope by suitable treatment to ameliorate the condition.

Influenza in Children.—Henry Heiman (*N. Y. State Jour., Med.*, April 7, 1907) states that the diagnosis of this affection is especially difficult in young children. One should hesitate to diagnose influenza without the presumptive evidence of an epidemic. Common colds and tonsilitis are often falsely called influenza. From measles the disease may be differentiated by the absence of Koplik's spots. In the occasional cases of influenza with an erythematous rash, only time will enable us to exclude scarlet fever; the leukocyte count may be of aid, for in influenza the white blood count is practically normal, while in scarlet fever there is a well marked leukocytosis. Pertussis is excluded by the presence of physical signs in the chest, which are generally

absent in whooping cough; moreover, the whoop in pertussis does not usually appear till about the end of the second week. Examination of the blood, course of the temperature, and absence of marked enlargement of the spleen will differentiate it from malaria and typhoid fever.

Confluent Hemorrhagic Eruptions in Varicella.—C. R. Porter (*Lancet*, May 18, 1907) saw a girl of thirteen with papular eczema of the face and hands. This recovered in two days under an application containing zinc oxide, and the first vesicles of variola appeared on the chest. These recurred in definite crops and were very numerous. Those on the face and neck coalesced in several spots and hemorrhage occurred into these areas of coalescence. The case was clearly differentiated from variola. Both hemorrhage and coalescence of vesicles are rarely recorded as occurring in varicella.

Acute Miliary Tuberculosis Following Intubation of the Larynx.—Arturo Primavera (*Gior. Internaz. delle Sci. Med.*, April 15, 1907) states that acute miliary tuberculosis may follow the traumatism due to intubation and extubation for laryngeal stenosis in cases in which there was a local tubercular focus in the larynx before the complication that caused the stenosis. He cites two cases of stenosis due to diphtheria, followed by acute miliary tuberculosis, in which the frequent introduction and removal of the tube necessitated by the difficulty of breathing without the tube had caused breaking down of the tissues to a marked degree. Traumatism is a cause of generalization of bacilli from a local focus. The inflammatory reaction of the traumatism sets in movement the bacilli or breaks the capsule of fibrous material which has inclosed the old focus. Acute miliary tuberculosis is not a primary process, originating from without; but an endogenous origin is necessary to prepare the enormous number of bacilli that are necessary to originate the numerous tubercles in all parts of the body. The bacillus does not multiply rapidly enough to produce them from a new focus. Hence we must always presuppose an old focus that has apparently healed. Tubercular vessels are a very frequent source of such infection. Surgical operations or procedures are a frequent starting point for such dissemination. In each of the children there was found at the autopsy a laryngeal condition that would indicate an advanced stage of tubercular degeneration, which must have existed for some time before the advent of the diphtheritic process that necessitated intubation. The course of the disease was short after the intubation had been done, the little patients dying in a few weeks of acute miliary tuberculosis.

Pseudoepidemic Cerebrospinal Meningitis.—Adolf Baginsky (*Berl. klin. Woch.*, April 8, 1907) describes a class of cases that resemble very closely epidemic cerebrospinal meningitis, but that are not epidemic. In the beginning it is impossible to differen-

tiate the two conditions. The onset is sudden, with high fever and meningeal symptoms, headache, vomiting, stiffness of the neck, Kernig's sign, increase of reflex activity, partial unconsciousness, and prostration. The cerebrospinal fluid contains many leukocytes. But the temperature falls soon by crisis and there is rapid recovery. Bacteriological examination does not show the Weichselbaum organism, neither do cultures made from the fluid. Usually they remain sterile. The staphylococcus may be found instead. This form of disease is not contagious, but pseudoepidemic. The number of cases in any given epidemic in which the bacillus of Weichselbaum is found varies very much. It is given by different authors as from fifty to one hundred per cent. The author describes five pseudoepidemic cases. Therapeutically, potassium iodide and inunctions of mercury were of value, with hot baths. When the cerebrospinal pressure is increased lumbar puncture is useful.

Nasopharynx as Infection Carrier in Cerebrospinal Meningitis.—J. S. Fraser and J. D. Comrie (*Scot. Med. and Surg. Jour.*, July, 1907) have examined the nasopharynx in thirteen cases of the disease, and in sixty-nine persons coming into immediate contact with them. While the organism was found in 33 per cent. of the fathers of cases, among other equally close contacts it was discovered only in 9 per cent. The writers failed to find the meningococcus in the nasopharynx of twenty-three contacts. They believe that hot, dusty, ill-ventilated atmospheres, which provide conditions favorable to the growth of the meningococcus and to the occurrence of nasopharyngeal catarrh, are often associated with the dissemination of epidemic cerebrospinal meningitis. The high comparative percentage of fathers, whose nasopharynx was found to contain the meningococcus, points to the fact that they probably are the carriers of the disease to their children. The chief incidence of the disease in the Leith epidemic was among children of the lower classes, and this is in favor of a nasopharyngeal infection. Infection of the nasopharynx is undoubtedly an important factor in spreading the disease. It is advisable to isolate all contacts and to carry out a bacteriological examination of the nose and nasopharynx. If the meningococcus be present these cavities should be disinfected, and the contacts should only be allowed to leave quarantine after the nasopharynx has been reported free from the meningococcus on two consecutive occasions.

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